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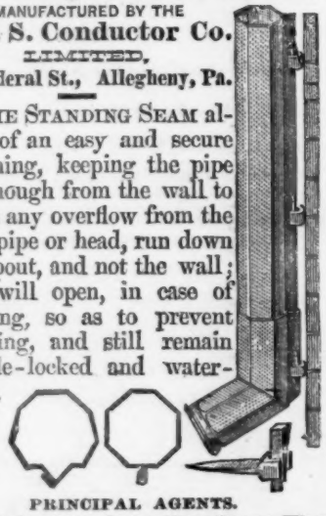

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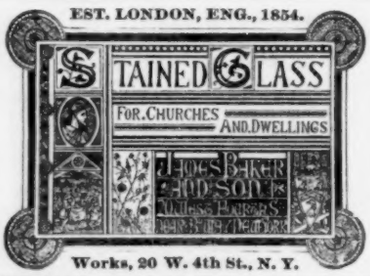

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Friezes, Panels, Mantel-Facings, Bas-Reliefs, &c., from Original Designs or those furnished, for the interior Decoration of Dwelling-Houses, Public Buildings, Hotels, Elevator-Cabs, Parlor and Passenger Cars, Steamers, &c., in Copper, Brass, Bronze, and Silver, reproducing with exact fidelity natural objects or other models.

Special attention is called to the reproductions from natural leaves and flowers in the panels and tiles for furniture and interiors.

☞ Correspondence solicited and estimates furnished on application.

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HAROLD PARKER, President. S. L. HOLDREGE, Treasurer.

BURDITT & WILLIAMS,
20 Dock Square,
BOSTON.

Unequalled Stock of Choice Hardware. Specifications figured and orders filled in all markets.

INSURANCE CO. OF NORTH AMERICA, - - of Philadelphia

Cash Capital	$3,000,000.00
Reserve for Re-Insurance	2,156,781.63
Reserve for Unadjusted Losses and other Liabilities	473,492.82
Surplus over all Liabilities	3,250,778.61

Clocks.

SETH THOMAS CLOCK CO.,
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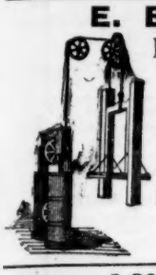
TOWER CLOCKS.
SEND FOR CATALOGUE.

THE E. HOWARD
WATCH AND CLOCK COMPANY.
CLOCKS
OF ALL KINDS.
TOWER CLOCKS A SPECIALTY.
114 Tremont St., Boston. 2 Maiden Lane, New York.

Elevators.

Z. WILE,
PASSENGER AND FREIGHT ELEVATORS,
Hand-Hoists, etc., of the latest improved inventions now manufactured. Invalid Elevators a specialty.
Office, 191 Tremont Street, Boston.

Safety Elevators,
Passenger and Freight; Steam, Air, and Hand-Power. SHERRILL ROPER AIR ENGINE CO., 93 Washington St., New York.

E. BREWER,

Hydraulic Passenger and Freight Elevators.
Hydraulic Dumb-Waiters, Freight and Hand Elevators.
267 Federal St., Boston.
149 Broadway, N. Y.
Send for Circular.

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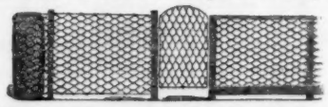
MACHINE AND ELEVATOR WORKS,
SULZER & VOGT, Proprietors,
Manufacturers and Dealers in all kinds of
ELEVATORS,
Nos. 717 to 731 East Main St.,
Between Clay and Shelby, LOUISVILLE, KY.

HOISTING
Machinery Exclusively.
STEAM, HYDRAULIC AND HAND POWER
ELEVATORS.
Send for Catalogue and Prices.
J. W. REEDY,
519 to 536 Canal St., New York. 82 to 91 Illinois St., Chicago.

LUDLOW-SAYLOR WIRE CO.,
No. 116 S. Fourth St., St. Louis, Mo.

IRON AND WIRE FENCES. WIRE CLOTH. WIRE ROPE.
Counter and Office Railings.
Iron and Wire Window-Guards.
Wire-Work of all kinds.

To Architects and Builders. Save one-half the usual cost of Accident Insurance by insuring in the **United States Mutual Accident Association,** 320 and 322 Broadway, New York. The oldest, largest, strongest and surest Mutual Accident Association in the World. Insures against accidents at half the rates of stock companies. Architects or Draughtsmen, having office duties only, can receive $10,000 insurance with $50 weekly indemnity at a cost of about $25 per annum, or half that amount of insurance at corresponding rates. Architects or Master Builders, supervising only, may receive $4,000 insurance with $20 weekly indemnity. Annual cost, $12.
How to become a member:—Write for Circular and Application-Blank, and when received fill out your application, enclose $5 and forward it to the Secretary at New York, on receipt of which a policy will be promptly mailed to you.

McSHANE BELL FOUNDRY

Manufacture those celebrated **Bells** and **Chimes** for **Churches, Tower Clocks,** &c., &c. Prices and Catalogues sent free.
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H. McSHANE and CO.,
Baltimore, - - - Md.

WIRE LATHING,
ESPECIALLY ADAPTED TO
Public Buildings, Private Residences, Mills, Warehouses, Stores, and all Mercantile Structures.
IT IS POSITIVELY FIRE-PROOF.
WIRE LATHING possesses the following qualities:
IT IS NOT COSTLY.
IT IS EASILY AND CHEAPLY APPLIED.
PLASTERING ON THE WIRE LATH WILL NOT CRACK.
THE LATH WILL NOT CORRODE.
The plastering, when applied, clinches on both sides of the wire, forming a double surface.
THE WIRE LATHING is extensively used by the United States Government in its Custom House Court House, and Post Office Buildings.
It is indorsed by the leading Insurance Companies, who have applied it to their own fine edifices.
Full information given on application to the
CLINTON WIRE CLOTH CO., Clinton, Mass.
68 Beekman Street, New York. 148 Lake Street, Chicago.

SHINGLE STAINS
Much Preferred to
LINSEED OIL AND CHEAPER ALSO.
S. CABOT, Jr. 70 KILBY ST.
BOSTON.
Send for circulars.

ATLANTIC
White Lead and Linseed Oil.
ROBERT COLGATE & CO.,
GENERAL AGENTS,
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OF VARIOUS TYPES AND PATTERNS.
SPECIAL PATTERNS
For Railway Water Stations, House Tank Service, Hydraulic Elevators, etc.
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NEW YORK, BOSTON,
CINCINNATI, CHICAGO,
ST. LOUIS, SAN FRANCISCO

HANOVER FIRE INSURANCE CO.

Cash Capital	$1,000,000.00
Reserve for Re-insurance	635,741.16
Reserve for all other Liabilities,	96,655.57
Net Surplus	832,744.56
Total Assets, January 1, 1883	2,565,141.29

BUILDING MATERIALS.
Reported for the American Architect and Building News.

BRICK.—₱ M.	New York. (*Wholesale Prices.*)	Boston.	Chicago. (*Prices to Builders and Contractors.*)	Philadelphia.
Common: *Cargo afloat.*				
Pale	$2 25 @ $3 50	Eastern	Building Brick	Hard
Jersey	4 50 @ 5 25	7 50 @ 8 50	6 50 @ 7 50	8 00 @ 8 50
		Bay State Hard		Salmon
Up River	5 00 @ 5 75	9 00		5 00 @ 6 00
Haverstraw Bay	5 75 @ 6 00	Domestic Com.	Indiana Pressd	Stretchers
" 1st	6 00 @ 6 50	8 00 @ 9 00	16 00 @ 28 00	11 00 @ 14 00
		Domestic Face	St. Louis Fronts	Pressed
Fronts:		@ 18 00	25 00 @ 30 00	20 00 @ 24 00
Croton, Brown	13 @ 14 00	Philadelphia		
" dark	14 @ 15 00	43 00 @ 45 00		
" red	14 @ 15 00	Phila. mould		
Chicago pressed		50 00 @ 80 00	22 00 @ 35 00	
Chicago Moulded			65 00 @ 350 00	
Baltimore	37 @ 41 00		50 00 @	
Glens Falls—white	30 @ 35 00	Glens Falls		
Philadelphia	@ 27 00	25 00 @ 26 00	42 00 @	
Trenton	@ 27 00		40 00 @	
Milwaukee		Glens Falls	25 00 @	
Moulded:		Mould.	60 00 @ 100 00	
Clark's Glens Falls—Red	25 00 @ 27 00	30 00 @ 35 00	30 @	
" —White	30 00 @ 35 00	35 00 @ 40 00	35 @	
White " Mold,	45 00 @ 60 00	45 00 @ 60 00	55 00 @ 65 00	
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	@ 100 00	Dom. @ 70
Enamelled (edge and end)	90 00 @ 115 00	@	@ 125 00	@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Chicago Lime in bulk			65 @ 75	
Wisconsin "			80 @ 90	
Rosendale Cement	90 @ 1 00	1 60 @ 1 50	*Not Sold.*	1 35 @ 1 75
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland (English)	2 60 @ 3 10	@ 3 50	2 75 @ 3 00	2 30 @ 3 50
" (Saylor's Am.)	2 05 @ 2 40	2 50 @ 3 00	2 75 @ 3 00	2 50 @ 3 00
" (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 75	3 00 @ 3 25
" (Lafarge)	3 50 @ 3 75	*Not sold.*	3 75 @ 4 25	4 50 @
" (Star)	2 70 @ 3 00	*Not sold.*	*Not sold.*	*Not sold.*
K. B. & S. (Eng.) Portland	2 85 @ 3 10		3 35 @ 3 50	3 00 @ 3 25
Burham " "	2 60 @ 2 80		3 15 @ 3 35	2 75 @ 3 00
Vorwohler	2 65 @ 3 25		3 00 @ 3 25	
German (Fewer)	2 50 @ 2 70			
" (Alsen)	2 50 @ 2 80	3 00 @ 3 50	3 15 @ 3 35	2 90 @ 3 25
Selenitic		1 65	*Not sold.*	
Hydraulic Lime of Teil	3 50 @ 4 00		*Not sold.*	
Roman	2 75 @ 3 00	3 50 @ 4 00	2 75 @ 3 25	3 25 @ 3 50
Keene's coarse	5 00 @ 6 00	7 50 @ 9 00	7 50 @ 9 00	6 50 @ 7 00
" fine	9 25 @ 10 25	11 00 @ 12 50	11 00 @ 12 50	11 50 @ 12 00
Lime:				
Rockland and Rockport, (Com.)	@ 95	1 10 @ 1 15	*Not sold.*	1 00 @ 1 25
Rockland and Rockport, finish.	@ 1 10		*Not sold.*	
State, com. cargo rates (nom.)	75 @ 80	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 00	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	1 30 @ 1 35	1 75 @	@ 1 75	1 60 @ 2 25
" (casting)	1 50 @ 1 65	@ 1 90	@ 2 00	2 25 @ 2 50
Hair (Cattle) ₱ *bush.*	25 @ 28	20 @ 25	30 @ 35	25 @ 35
" (Goat)	32 @ 35		35 @ 40	@
Sand, ₱ *load*	1 00 @ 1 25	1 00 @ 1 50	100 @ 1 25	75 @ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		60 @ 1 00		
Limestone:				
Bedford	@ 1 00		50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@	@ 1 00	35 @ 60	
Serpentine	@		80 @ 90	

(*Continued on page* vi.

10

For a Sash of 250 lbs.

"MORTON'S METAL"

(Registered Trade-mark, May 1st, 1883.)

Cable and Champion Sash-Chains

and Patented Attachments.

The most **RELIABLE** and **CHEAPEST** article in the market for suspending

Window-Sashes.

HAS GREAT TENSILE STRENGTH,

Can be easily applied to any window, and gives SATISFACTION wherever used. Samples sent to any ARCHITECT free on application. Now in use in all the leading cities throughout the United States.

MANUFACTURED ONLY BY

THOMAS MORTON,

65 ELIZABETH ST., NEW YORK.

1

CHAMPION CHAIN.

BUILDING MATERIALS.	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia. (Prices to Builders and Contractors.)
Foundation:				
Dimensi ( )	@	5 00 @ 6 00	20 @ 28	;30 @ 5 00
Block	@	@ 5 00	8 50 ₱ cord.	50 @ 6 00
Rubble	@	@ 1 75 ₱ perch.	8 50 @	
Bluestone: (₱ *sq. ft.*)		30 @		
Sidewalk	30 @ 5 00		75 @ 1 00	70 @ 90
Planed	50 @ 6 00		50 @ 1 00	1 10 @ 1 25
Sandstone,				
Brown	@ 1	@ 1 40	1 50 ₱ cub.ft.	
Amherst	@	@ 1 05	55 @ 65	
Berea	@	@ 1 05	45 @ 55	70 @ 90
Berlin	@ 1	@ 1 05	55 @ 65	
Bay of Fundy	@ 1	@ 1 00	*Not sold.*	
Belleville	@ 1 40	80 @ 1 00	"	
New Brunswick	@ 1 00	@ 90	"	
Caen	@	@ 80	"	
Marble:				
Lee, Mass	@	1 75 @ 2 00	*Not sold.*	2 00 @ 2 50
Rutland, white	@	50 @ 1 05	3 50 @ 5 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	1 25 @ 1 75	3 50 @ 5 00	1 50 @ 2 50
Glens Falls, black	@	75 @ 1 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	40 @ 50	@ 4 40	—— @ ——
" Sienna	@	75 @ 2 00	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	75 @ 2 00	@ 4 00	2 00 @ 3 00
" Knoxville	@	50 @ 60	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 5 00	
Slate:				
Roofing, (₱ *square*)	@			
" green	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	@ 7 00
" purple	7 00 @ 8 50	4 50 @ 7 00	@ 8 60	@ 7 00
" red	@ 15 00	12 00 @ 13 00	—— @ 16 00	5 00 @ 5 75
" black, Lehigh	—— @ ——	*Not sold.*	7 20 @ 7 60	5 00 @ 5 75
" " Chapmans	—— @ ——	*Not sold.*	7 30 @ 8 00	6 00 @ 6 25
Tiles, Am. ₱ M.	@		*Not sold.*	@ 15 00
LUMBER.—₱ M. (*Ordinary dimensions.*)				
Boards:				
Pine, 1st quality, clear	65 00 @ 75 00	53 00 @ 54 00	47 00 @ 49 00	
" 2d quality	55 00 @ 60 00	45 00 @ 48 00	42 00 @ 47 00	
" 3d quality	18 00 @ 22 00	38 00 @ 42 00	41 00 @ 45 00	
Spruce	@ 25 00	14 00 @ 17 00	*Not sold.*	
Hemlock	ea. 17 @ 18	11 00 @ 13 50	@ 10 00	11 50 @ 15 00
Yellow pine	20 @ 40	32 00 @ 36 00	@ 28 00	16 00 @ 18 50
Clapboards:				
Pine	@	35 00 @ 45 00	14 00 @ 22 00	—@—
Spruce	@	26 00 @ 30 00	*Not sold.*	—@—
Framing Timber:				
Pine		30 00 @ 40 00	13 00 @ 15 50	25 00 @ 35 00
Spruce	14 00 @ 18 00	13 00 @ 16 50	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	8 00 @ 15 00	13 00 @ 19 00	12 00 @ 13 00
Yellow pine	20 00 @ 30 00	25 00 @ 32 00		22 00 @ 24 00
Laths:				
Pine	@	@ 3 00	2 25 @	—@—
Spruce	2 00 @ 2 10	@ 2 50	*Not sold.*	2 40 @ 2 60
Shingles:				
Pine, shaved	5 00 @ 6 00	5 00 @ 7 00	*Not sold.*	
Pine, sawed	4 00 @ 5 60	4 25 @ 5 00	2 25 @ 2 60	
Spruce, sawed	2 50 @ 2 75	1 50 @ 1 75	*Not sold.*	
Redwood	2 10 @	4 00 @ 7 00	5 50 @ 8 00	30" $10 @ 28
Cedar, split	@	2 50 @ 5 50	*Not sold.*	24" 8 @ 21
Cedar, sawed	@	@ 3 75	@ 2 30	20" 5 50 @ 14
Cypress 7 x 24	18 00 @ 20 00		*Not sold.*	16 0 @ 20 00
Miscellaneous:				
Piles ₱ ft.	4½ @ 6	Piles 6c. ₱ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00		Pine, 8 @ 22	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@		9 00 @ 21 00	70 @ 1 25
Chestnut	@		*Not sold.*	28 @ 36
Finishing Woods: ₱ M. (*First Quality, Kiln-dried.*)				
Ash	@ 55 00	38 00 @ 42 00	35 00 @	
Cherry	80 00 @ 120 00	60 00 @ 70 00	75 00 @ 85 00	55 00 @ 65 00
Chestnut	@ 55 00	38 00 @ 42 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	45 00 @ 60 00	55 00 @ 65 00
Mahogany, Baywood	@ 180 00	100 00 @ 150 00	@ 180 00	100 00 @
" St. Domingo	@ 350 00	180 00 @ 250 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	30 00 @ 35 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	38 00 @ 42 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	55 00 @ 60 00	50 00 @	70 00 @ 80 00
Pine, clear	65 00 @ 70 00	45 00 @ 55 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	70 00 @ 75 00	60 00 @ 70 00	60 00 @ 70 00	100 00 @
Rosewood ₱ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	90 00 @ 120 00	85 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	35 00 @ 38 00	32 00 @ 35 00	20 00 @ 30 00
Yellow pine ₱ M	@ 45 00	32 00 @ 36 00	32 00 @ 35 00	30 00 @ 35 00
Gumwood, best red		60 00 @ 70 00	30 00 @ 35 00	
PAINTS. (*In oil, ₱ lb.*)				
White lead, Am	6½ @ 6¾	6 @ 6½	6½ @ 6¾	4 @ 6½
" Zinc, "	8 @ 8½	11 @ 12	07 @ 11	4 @ 8
Red, Am.	6 @ 6½	@ 12	*Not sold.*	
" Venetian	6 @ 10½	10 @ 12	1½ @ 2½	4 @ 6½
" Vermilion	55 @ 60	12 @ 20	50 @ 75	Am. 12 @ 16
Red Indian, Eng	12 @ 20	13 @ 20	12 @ 20	12 @ 16
Yellow Ochre	6 @ 15	11 @ 12	3 @ 15	4 @ 9
" Chrome	12 @ 20	18 @ 25	12 @ 25	12 @ 25
Green (chrome)	8 @ 13	@ 18	8 @ 20	9 @ 14
Green, Paris,	16 @ 20	8 @ 12	16 @ 35	14 @ 29
Black, lamp	8 @ 12	18 @ 20	8 @ 30	12 @ 18
Blue, ultramarine	12 @ 18	@ 28	10 @ 35	20 @ 35
Oil, linseed, (raw) (₱ gall.)	54 @ 57	54 @ 56	57 @ 60	56 @ 60
" " boiled (₱ gall.)	59 @ 60	59 @ 61	60 @ 62	59 @ 63
Turpentine (₱ gall.)	30 @ 32	@ 38	35 @ 38	38 @ 41
Varnish, coach (₱ gall.)	@	2 00 @ 6 50	1 25 @ 2 00	1 40 @ 4 00
Shellac (₱ gall.)	@		3 25 @ 4 00	1 75 @ 3 00
Putty (dry)	2 @ 3	2 @ 3	02 @ 03	2 @ 2½
Whiting (dry)	50 @ 90	@ 3	1 @ 2	½ @ 7-10
Paris white, (Eng.,) (dry)	30 @ 2 00	1 @ 1½	2 @ 2½	1 30 @ 1 60
Litharge, Am (dry)	5½ @ 5½	2 @ 2½	6½ @ 10	6½ @ 7
Sienna, (burnt) (dry)	12 @ 17½	@ 18	4 @ 16	9 @ 14
Umber, " (dry)	11 @ 16½	@ 17	@ 10	9 @ 14

(*Continued on page* vii.)

FOR HEAVY SASH

USE

RAYMOND'S

Compressed Lead Sash Weights.

With Wrought and Malleable-Iron fastenings.

Twice the heft of iron. Occupying only half the space.

Prices no higher than the ordinary cast lead-weights.

Freight allowed to any part of the country.

Send for Circular.

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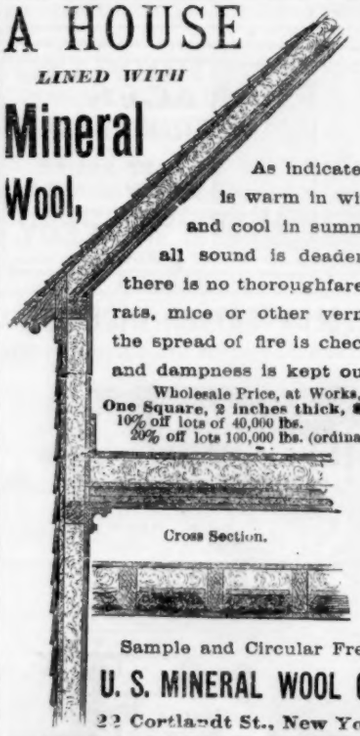
55 & 57 West Lake St., Chicago, Ill.

A HOUSE

LINED WITH

Mineral Wool,



As indicated, is warm in winter and cool in summer; all sound is deadened; there is no thoroughfare for rats, mice or other vermin; the spread of fire is checked and dampness is kept out.

Wholesale Price, at Works, **One Square, 2 inches thick, $4.00.**

10% off lots of 40,000 lbs.

20% off lots 100,000 lbs. (ordinary).

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Sample and Circular Free.

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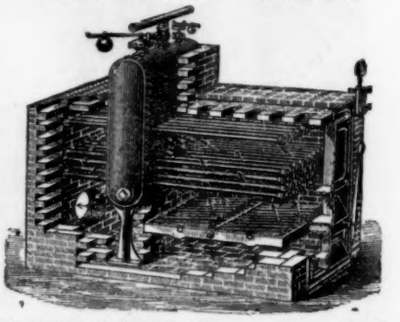
THE HOLLAND

Patent Wrought-Iron Boiler

FOR STEAM HEATING.



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PETER BACKUS,

Steam Heating Apparatus,

For Public or Private Buildings.

Sole New York Depot For the Sale of the

Albany Steam Trap Co.'s Specialties.

133 & 135 W. 25th St., New York.

(Be 6th & 7th Aves.)

Heating and Ventilation.

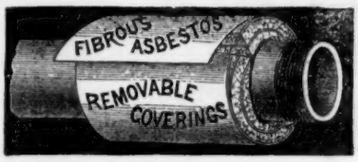
Fire ON THE Hearth

In various forms, viz: — **Air-Warming Grates, Fireplace Heaters, School-Room Heaters, Stoves, Double Heaters,** Each combining the ventilation of an open fire with the power and economy of a warm air furnace.

"Palace King Furnaces."

OPEN STOVE VENTILATING CO.
78 Beekman St., New York

PIPE-COVERING.



This covering is made entirely of Asbestos, and can not be affected injuriously by heat or dampness, nor can it be made a harbor for vermin.

Asbestos Building-Felt, Fire-Proof Cements, &c.

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THE PERRET PATENT FURNACES,

For burning Coal-dust, Sawdust, &c., will save from 50 to 90 per cent in your Fuel Account

Send for descriptive Circular.

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2218 to 2224 Pennsylvania Ave.,
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Unparalleled Success
The New AMERICAN Automatic
Steam Heater
FOR DWELLINGS, PUBLIC BUILDINGS, RAILWAY STATIONS, OFFICES, &c.
Low Pressure, Self Regulating, Durable, Economical, Cheap,
UNIFORM HEAT NO GAS BUST, OR SMOKE NO OBJECTIONS
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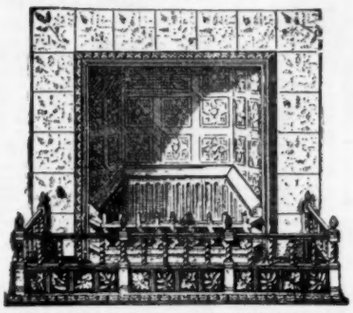
10 BARCLAY ST. NEW YORK
Newell Universal Mill Co.

PHILADELPHIA GRATE WORKS.

THOMAS S. DIXON & SONS,
MANUFACTURERS OF

FINE **GRATES**

Furnaces, Ranges.



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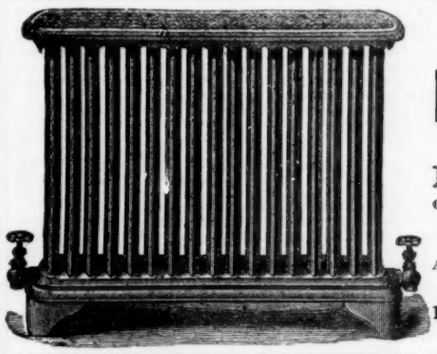
Gas-Log Fires.

IMPORTERS OF ENGLISH AND FRENCH FIRE-PLACE FITTINGS.
1330 Chestnut Street, - - Philadelphia.



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Heating Apparatus,

For Public Buildings and Private Dwellings.

REED'S RADIATORS,

Gold's Patent Sectional Boilers.
Gold's Pin Indirect Radiators.
Mill's Sectional Safety Boilers.

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For Stores, Hospitals, Factories and all Public Buildings. Estimates and specifications furnished for direct and indirect heat. Boilers of superior quality and design; also Steam Pumps, Iron Pipe and Fittings. Call or address

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Stable Fittings a specialty.

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Brass Fenders, Andirons, Fire-Sets, Coal-Hods, Frames, Iron Fireplaces, Tile Stoves,

Artistic Wrought-Iron Andirons, Fenders and Fire-Sets. Our own Make.

Agts. for the new and beautiful "TRENT" ART-TILES.

Estimates given on Fireplace and Tile-work of all descriptions.

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Send six cents in stamps for Brass Catalogue.

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Electric Warm Air Wrought-Iron Heaters.
Sectional Boilers.

Steam Compound-Coil Wrought-Iron Circulating Heaters.
Pin Radiators.

Combined Water and Steam Wrought-Iron Heaters, heated by live or Exhaust Steam for Cars, Factories, Shops, Conservatories, Public and Private Buildings, etc.

Saving in fuel fifty per cent over any other system.
Plans, specifications, & estimates furnished on application.

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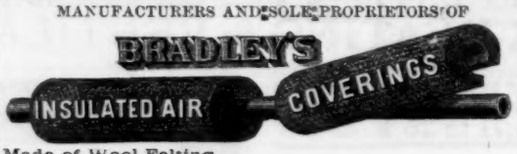

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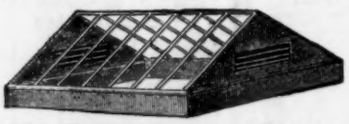

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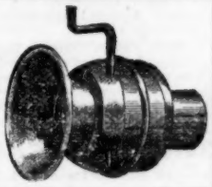

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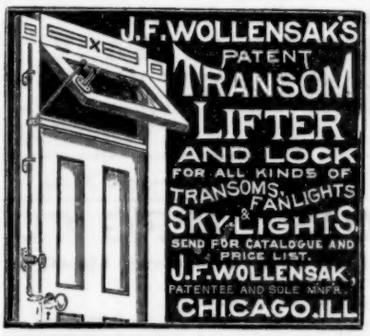

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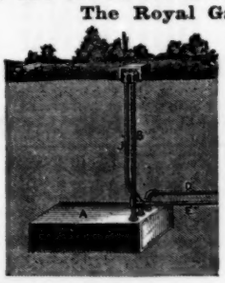

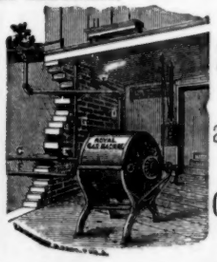

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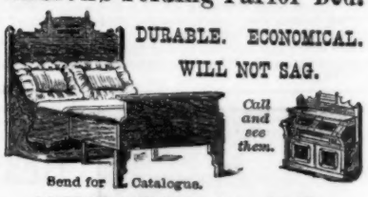

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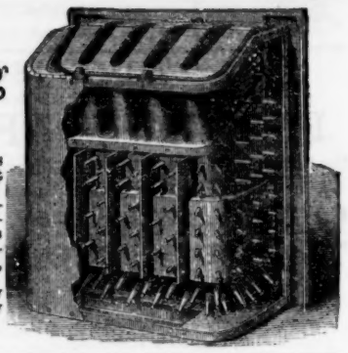

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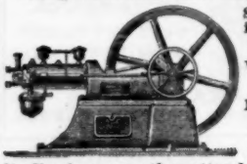

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THE next Annual Convention of the American Institute of Architects is to be held at Albany, N. Y., beginning on Wednesday, October 22. At the last convention held in Providence and Newport, so strong a desire was expressed by many members for an opportunity to study the remarkable buildings now in process of erection at Albany, that the Trustees decided to make an effort to arrange for the next meeting of the convention there; and the effort proves to have been successful. To say nothing of the interest of the buildings in and near Albany, the routes by which the city is reached, from New York and the south by way of the Hudson River, from Boston and the east through the Berkshire Hills, and from the west by the lakes and the Mohawk Valley, are particularly interesting, and those who have never been in the capital of New York State would do well to plan for a trip which will give them leisure for enjoying the journey as much as possible. The details of the meetings of the convention are not yet arranged, and will form the subject of a future announcement, but the Trustees have, with reason, thought that the members would be glad to know as long beforehand as possible the place where it is to be held, and have sent a brief notice accordingly.

THE New York bricklayers have chosen what they think is an opportune time to demand that the number of hours in a working day shall be reduced from ten to nine, and to enforce their demand by a general strike. Although the ordinary absurd claim is made, that a man will do as much work in nine hours as in ten, no one, either among the builders or their men, pretends to believe anything of the sort, and the strike is universally regarded as a round-about way of obtaining an advance of ten per cent in their pay. It is much to be hoped that this will be the final result, and that the bricklayers will continue to do their full day's work, at wages somewhat better than those which they now receive. There must be many among them who can see that the enforced reduction of their working time, at the dictation of leaders whose interests are in every respect opposite to their own, would be a grave misfortune. Sooner or later the scale of wages must conform to the work done to earn them, and whether the general rate is high or low, the man who is content to do only nine-tenths as much work as other people must make up his mind to see himself rewarded with only nine-tenths as much respect and nine-tenths as much comfort and happiness as his neighbors enjoy.

A CASE of real hardship inflicted by telegraph poles is reported from Boston, where, not long ago, the Western Union Telegraph Company took advantage of the quiet of a Sunday to place its poles along the sidewalk of Friend Street, a narrow but much-frequented street in the business part of the city, close to four railway stations. The peculiar Boston fashion of making sidewalks about half wide enough for the people who use them is carried to its height in Friend Street, and although the roadway is sufficiently spacious to accommodate not only the traffic which belongs to it, but, like most Boston streets, to furnish stable-room also for the cart-horses who peacefully munch their oats in the place which human beings need so much, the unfortunate pedestrians who take that route to and from the railway stations have found themselves on rainy days, since the telegraph poles were erected, obliged to close their umbrellas every few steps, the distance between the poles and the front walls of the buildings not permitting the passage of an open umbrella. In fact, as was shown by testimony given before a committee of the city government, the distance from the poles to the wall of a large and popular carriage warehouse fronting on the street is thirty-four inches, which, as our readers can ascertain by measurement, is ten inches less than the width of an open twenty-six-inch umbrella, and about a foot and a half less than that of perhaps the majority of the umbrellas which try to get by. In some places the space seems to be still less, a witness testifying that in front of his manufactory the telegraph pole occupied one-third of the sidewalk; and one person, who had observed the people going through the street to and from the railway stations, found that one-third of the pedestrians who passed his place of observation were obliged to step from the sidewalks into the gutter to get by the poles. To add to all this discomfort, the representatives of the insurance companies, who inspected the street soon after the poles were put up, have given notice that on account of the increased risk from running of telegraph wires so near the buildings the rates of insurance on all the property on the west side of the street will be raised twenty-five per cent on the first of next August, unless the poles are removed before that time. The buildings which line the street are occupied to a great extent for manufacturing costly goods, and such an increase of insurance rates would be a heavy tax on their owners and lessees. The representatives of one firm alone, in remonstrating against the use of the street for poles, showed that the increase in premiums which their presence involved would cost him and his partners five hundred dollars a year in cash, without securing for them any benefit whatever, and, if the right of the telegraph company to occupy the sidewalk should be sustained, without any hope of indemnity. Such a case as this certainly deserves serious attention. The Massachusetts courts have shown themselves watchful in protecting private property against the invasion of corporations, and it will be interesting to learn what they think of the rights of owners of real estate in the streets and sidewalks in front of their buildings.

WE would like to call the attention of real-estate speculators to a story which appears in some of the late English journals. Astute as some of our business men are, it must be confessed that they have not yet learned all that is to be known in the way of making money at other people's expense. Some forty years ago a certain builder in London bought a large tract of land in the suburbs of the city, and laid it out as a burial-ground. He was prudent enough to avoid the formal consecration of the ground, but had a chapel built upon it, and sent out a great number of circulars, calling attention to the advantages of his "North-east London Cemetery." The beautiful burial-grounds now commonly set aside in the vicinity of large cities were then hardly known, and the "North-east London Cemetery" soon became a very profitable piece of property. In eleven years twenty thousand bodies were interred there, or, rather, were consigned, with a handsome fee, to the care of the owner of the cemetery, who saved himself the cost of unnecessary excavation by piling the coffins one above another in the same grave, eight being his limit for a stack of adult remains, while children were allowed to accumulate to nearly double that number. In 1855 the cemetery was closed by order of the Government, and further interments forbidden. By that time, however, the city had extended so far out into the suburbs that the disused burial-ground began to have a prospective value for house-lots, and the proprietor, like the far-seeing business man that he seems to have been, began at once to modify the character of the place, so that all associations likely to prejudice the mind of purchasers might be effaced before the land came into the market. With this view the gravestones and monuments were pulled up, the surface of the ground leveled, the chapel demolished, and a quantity of rubbish dumped in various parts of the place, to give it the characteristic air of vacant London lots.

CUSTOMERS for the land soon appeared, and a part of it was sold, but just as the purchaser was about to commence building on his lots, some one, who knew the former character of the place, interfered, and he was obliged to desist. The Metropolitan Board of Works, which answers in London to the Department of Buildings in our large cities, kept watch over the transformed cemetery, and refused to authorize the erection of any structure upon it. The vigilance of the Board seems to have been effectual, for it was not until 1883, nearly thirty years after the ground had been prepared for market, that the successor of the original owner began to build houses upon it, notwithstanding the refusal of the Board to give him authority to do so. In accordance with the usual procedure, the offender was summoned before the court, where a curious discussion took place. The by-law of the Metropolitan Board, under which the complaint was made, forbids the erection of buildings upon land "which has been filled up or covered with material impregnated with obnoxious matters;" and the question before the court was whether a plot in which twenty thousand corpses still lay buried could be described as having been "filled or covered with material impregnated with obnoxious matters." In the opinion of the judge it could not properly be so described. Although he recognized the importance of the case, he believed that the by-law was intended to apply to instances where artificial rubbish, impregnated with injurious matter, had been used as a foundation for houses; and the extension of this to apply to a burial-ground was a technical mistake. He expressed his willingness, however, to grant an order for bringing the case before a higher court; and the prosecuting attorney, who seems to have been rather disconcerted at the result of his efforts, gave notice that an application would be made for such an order, remarking, with considerable reason, that if there were no remedy against such operations as were in progress at the old cemetery, it was time that the municipal authorities should know it.

A CASE very similar in some respects was decided in Philadelphia a few days ago. Our readers will remember the disastrous fire at the Randolph Mills in that city, by which several persons met a dreadful death through the neglect of the person responsible for their safety to provide proper means of escape; and many will recollect also that one or more suits were brought against the owner of the estate for indemnity for the loss suffered by those who were thus deprived of the comfort and support which they were entitled to receive from their children or other relatives, or were themselves maimed or injured. One of these, which has been for a long time in litigation, has now been decided adversely to the plaintiff in the highest court of the State. There could be no doubt of the justice of his claim for compensation from the person to whose fault he owed his injury, and the judge himself expressed his regret at the loose and uncertain language of the statute, which had misled the complainant into making his demand upon the owner of the land, instead of upon the lessee, who had built the mills in his own way upon territory held on a ground-rent, and was, therefore, in the opinion of the court, the owner intended by the statute. As the judge remarked, a ground-lease might run for a term of hundreds of years, and it could not be that the Legislature intended to make the owner or inheritor of the freehold responsible for the acts of persons with whom he might have had no direct dealings whatever, and over whom he had no control.

AT the Congress of Architects, recently held in Paris, a proposition was submitted to the members, having in view the formation of a fund "for the defence of the interests of architects." The idea of establishing a fund, formed by small regular contributions from the members of the profession, out of which should be paid the cost of legal proceedings for enforcing the rights of architects too poor to resist injustice unless aided in some such way, was discussed at the local Congress of Architects held a few months ago at Nice, and a committee was then appointed to consider the subject and report at the Paris meeting. The provisional scheme prepared by the committee was laid before the Congress by M. Hermant, not for immediate action, but to obtain the informal opinion of the members; and as this proved to be very favorable, it is likely that further steps will soon be taken to carry out the plan. The proposition made by the committee was that the protective association should be placed under the auspices of the Société Centrale des Architectes, the most dignified and comprehensive professional body in France. All members of this society, or of the departmental societies which are affiliated with it, would be admitted to the protective association without question, on signifying their wish to enter it; those not members of professional societies would be received only after a favorable vote in the standing committee on admissions.

EACH member of the protective association would be required to pay an admission fee of six dollars, and annual dues of about two dollars and a half, and would be expected, in addition to these dues, to assign to the association any surplus funds which the award of a court might leave him in possession of, after his actual losses and expenses had been repaid to him. In return for this the association would undertake or assist in the defence of its members against fraud or injustice, under the restriction that the cases to be maintained with the help of the association must be approved by the members of the administrative committee, to whom all necessary documents and information relating to the affair must be submitted for examination. A month would be allowed for this examination, in which the standing judicial committee of the Société Centrale would assist, and only those cases would be undertaken which should have a general interest for the profession. The plan proposed that no organization should be attempted until three hundred architects should have signified their desire to join the association. From the interest taken in the subject, both at Paris and Nice, it is likely that this number of subscribers would easily be obtained, and the association, starting thus with a fund of twenty-five hundred dollars, would become at once a powerful element in professional life.

OUR readers will remember the ingenious gentleman in Philadelphia, who, when he heard that the tax-gatherer was approaching, put his pictures into a room by themselves, and claimed that being thus displayed in a "gallery" they were not taxable as furniture, or indeed, under any other denomination known to the law. We are not quite certain whether it is the hero of this performance, or some other person holding similar views on the subject, who, after a long struggle with the assessors, has just succeeded in establishing his theory by a decision of Court. The Act of the Pennsylvania Legislature, which describes the classes of objects to be taxed, specifies "household furniture" as one of them, and the question brought before the court was simply whether pictures were "household furniture" or not. A good deal of erudition seems to have been expended on the matter, and it was made pretty clear that according to the usage of the best masters of the English language, furniture does include pictures, as well as other ornaments; but the judge found, on examination of adjudicated cases, and other evidence, that for forty years the law had been interpreted, not only by the public, but by the assessors, as intending to include under this head only housekeeping appliances, and not articles serving exclusively for ornament; and in delivering his opinion that this ought to be taken as the true meaning of the Act, he expressed the hope "that the exigencies of the State would never require the taxation of Art, which all civilized men, in all ages of the world, have sought to encourage and develop."

THE people of Paris have for a long time felt the inconvenience which is presented by most crowded city streets, — that during the middle of the day the throng of carriages and wagons often keeps women and children who wish to cross from one side to the other waiting for many minutes, to their great inconvenience, or, if they are courageous enough to try to thread their way through the moving crowd of vehicles, exposes them to great danger. The Parisians seem to have understood that bridges like the one built over Broadway a few years ago would not be satisfactory, and the municipal government has never allowed itself to be persuaded into erecting them; but a proposition has recently been made which meets with much more favor. The new plan contemplates bridges across certain crowded streets, differing from the old Broadway bridge in spanning the whole width of the street, from building to building; and in being approached through the buildings which serve as piers on each side. The appropriation for public uses of the small portion of a house or shop needed for erecting a stairway would not be a costly matter, and the increased length of a bridge spanning sidewalks as well as roadway would involve no difficulty in construction; so that, in cases where such bridges are needed, the suggestion seems to be a valuable one.

SPANISH ARCHITECTURE.[1] — XVIII.

TARRAGONA.

N the way to Tarragona I stopped a few hours at Lerida, and found it a small city stretching along the banks of its river, the Segre, at the base of a steep hill. One long street constitutes nearly all there is of Lerida, but it is not a straight succession of rectangular blocks. On the contrary there are bends and windings as numerous as in a natural stream, and so it is not a monotonous or uninteresting street after all. The old stone bridge — it seems as if a Spanish city would not be complete without its picturesque arcades of mouldering stone-work — is badly broken by a flood, and the gap is filled with light modern lattice-girder work in iron, a lamentable illustration of the way art is now divorced from engineering, not only in its own angular hideousness, but in its utter want of harmony with its surroundings.

A little farther on is found the cathedral, a disappointing building in Corinthian Renaissance. The old cathedral, although about the first thing seen in approaching the city, is the last visited, because it is perched upon the summit of the almost precipitous hill, three hundred feet above everything else, and because the French desecrated it in 1707 and made of it a great fortress, which it has ever since been, and much red tape and military machinery has to be put in motion for a stranger to get admission. It was formerly a noble building, much resembling in style the cathedral at Tudela, but more massive, and in some parts of an earlier type. It differs from most others in having an extraordinarily large and lofty cloister at its west end (an unusual position) and in the situation of its steeple, which stands most irregularly at the extreme south-west corner of the cloister. This tower is octagonal in plan, and not one of its sides is parallel with any of the walls of the building. It is nearly detached from the cloister-walls, and is so successful in effect that when the architect of the Micalete at Valencia was sent to various cities to observe and study before he designed, he took this for his prototype, and even copied the peculiar angle at which it stands. There is very much beautiful work here, and it is unfortunate that it should be so obstructed and degraded as it is, — but this commanding site bore a fortress long before the cathedral was raised upon it. The Romans made a stronghold there; but the first church was of the sixth century. The Moors, too, conquered and were conquered there, and in 1203 the cathedral which now stands was commenced in the presence of the king, Don Pedro II.

Another journey across an undulating country covered with wheat and vines, not always the most fertile of lands, but showing signs of the industry of the Catalonians, who differ as much from the haughty Castillians as they do from the indolent Andalusians, and who love both so little that they would welcome independence. Soon the sight and sound and perfume of the beautiful Mediterranean Sea were encountered again and were very welcome this scorching midsummer day. The city of Tarragona was for a little my abiding-place, and very happy were the days spent in and around its neglected old walls; sketching in those noble old cloisters, where there was always shade and nearly always a movement of air, and where the peace-giving cigarette was not forbidden, or rambling out beyond the gates, upon roads whose dusty lengths were qualified by plenty of time to cover them; and over craggy hillsides by goat-paths or no paths at all, and at other times reading, or bathing in some delightful little bay, with walls of rock and floors of sand, enclosing a choicest bit of solitude for an amphitheatre, with the deep-blue sea for a stage, and solitude instead of the noisy play of the civilized world. The Mediterranean is indeed blue. I used to think some of its pictures were exaggerated beyond any possible natural coloring, but under certain skies and lights the water is of an intense ultramarine hue.

To return to my legitimate subject, the city is not particularly attractive as a whole; there is an unfinished air about the modern portions, and an untidy, neglected look in the old. The station stands in the midst of a dusty yard, now piled with massive stones and mounds of rubbish, in the masons' hands for some improvement. The streets seem to lead vaguely to no particular points, the port (although every Mediterranean port has some attraction for the artist) is dirty, and at the higher end of the city, where the *paseo* overlooks the sea, the fortified scarp is rutted with rains and strewn with refuse. It is best to go into the lovely country or else into the cathedral. This is a splendid early Gothic building, no doubt dating from the thirteenth century, although its archives have not yet yielded to modern search any very distinct dates. Its style is the perfection of that simple first period of Gothic, except for some of the earliest parts, which are of the rounded-arched transitional period. It was of this that Mr. Street wrote: "I thought I saw one of those openings which are now and then almost accidentally given us for the infusion of new vigor and greater spirit into our own works. It is no copying of a Spanish work that I should wish to see attempted, but only a deliberate determination on the part of the builder of some building in England to emulate the grand solidity of this old Spanish church, and if he feels that this is too rude and unpolished for an overcivilized age like ours, then let him take a lesson from the same old Spanish work, and show the extent of his refinement in the subtle delicacy of the sculpture with which he adorns it." This is very strong praise, but it is very good advice, because the subject merits the approbation. The cathedral is a well-proportioned, massive edifice, composed of nave and aisles in five bays, transepts, and three chapels with circular apses, the central being of course the *capilla-mayor*. The eastern apses are apparently somewhat earlier than the rest, although not enough so to be of distinct style, yet there is much of Romanesque character in them. The view of the interior is taken from the south aisle looking into the *capilla-mayor*. It will be noticed that the expedient of the paired shafts before mentioned (Tudela) is used here with the same good results. The effect of the stilting of main arches upon a die of masonry above the capitals is very good, although it is uncommon.

The north transept is curious. There are two transverse ribs to the wagon-vault, and each diminishes the size of the transept by its own depth, the second bay being about two feet narrower than the first, and the third the same less than the second. The effect upon the perspective is quite considerable, and it seems to me to be legitimate; it is very satisfactory. The transept circular windows are filled with rich glass, not faultless in design, but with a fine, sparkling use of white glass in small pieces among deep colors. The nave is simple and grand; the vaulting shafts are paired the same as those at the crossing. It is a pity the lancet clerestory is not continuous; its small openings and simple forms harmonize better than the fourteenth-century windows of geometric tracery which have been introduced in most places. Many of these windows are filled with plates of stone between the mullions, pierced with small trefoils and quatrefoils, and these little openings, filled with gem-like stained glass, have in this climate of brilliant light a charming effect. The vaulting (except north transept and apses) is simple quadripartite. The lantern over the crossing is good in detail, but squat and graceless in proportions. The doorways are very fine. The exterior has been much obstructed by later buildings, and nowhere can be seen in any complete beauty. The cloisters are magnificent. Perhaps it will be best to let the illustrations supply detailed information (see the illustrations published in our last issue). Suffice to say that in all the carved and sculptured details there is such infinite variety and unfailing delicacy that their examination is like that of a masterpiece of poetry. There are interesting traces of Moorish influence, too, as, for example, in the shutters of the windows to the chapter-house seen in one of the views, and in certain remains of the traceries which once filled the circular openings above the arches. Wherever the foreign style is used it is done with all necessary harmony.

The little church of S. Pablo, with diminutive Romanesque façade, is curious and good, and many of the towers and bastions of the city walls repay inspection; they are in all stages of ruin; and when not imposing are at least picturesque. In a valley about three miles from the city is a fine Roman aqueduct in two tiers of arches across a steep ravine — a monument in a wilderness. The top is a pathway now, about four feet wide, and demanding a steady nerve to make use of it when a fresh breeze rustles down the hills. The water channel has disappeared except for some traces, and (of course) the people call the whole work the "Puente del Diablo."

[1] By Robert W. Gibson, Travelling Student of the Royal Academy. Continued from page 304, No. 444.

THE WORK OF THE MISSISSIPPI RIVER COMMISSION.

THE United States Commission, which was required "to take into consideration, and mature such plan or plans and estimates as will correct, permanently locate, and deepen the channel and protect the banks of the Mississippi River; improve and give ease and safety to the navigation thereof; prevent destructive floods, and promote and facilitate commerce, trade, and the postal service," has a very important and difficult task. Some account of the problems with which this body have had to grapple, and the very gratifying practical results of their labors, will no doubt be interesting.

The work is executed by the Secretary of War, through officers of the engineer corps, under the general supervision, and in accordance with the plans of, the Commission with respect to the things to be done and the methods of working, while the contracts, disbursements, and accounts are under the supervision of the chief of the engineers in charge.

What is the nature of the obstacles to be overcome? What are the methods employed? and what has been the success?

Were the river channel empty, its condition would surprise almost every one. A journey down stream would be over a succession of sand-hills a hundred or a hundred and fifty feet in height, and so steep that often a horse would find hard work to climb them. The tops of these hills are of course the bars so much dreaded by the steamboatman at low water, as then they often reach within five feet of the surface. These hills have been deposited particle by particle

below every bend in the stream. Most of them are not high enough to trouble the pilot, but below Cairo there are some forty of them that are. These are distributed in groups, each group occupying stretches — technically called "reaches" — of from twenty to forty miles of the river's course. Ten-foot channels upon these bars is the least depth that will answer the needs of commerce; fifteen feet are needed, and twenty are hoped for. To get even ten feet, the tops of these hills must be lowered from three to five feet. To do this so that it will stay done is the problem.

The plan adopted aims at reducing the width of the channels over these hill-tops or bars. This, of course, will increase the speed of the current and its power to "scour" out a deeper track for itself. As the river sweeps round a bend, its swiftest flow and its main attack is upon the concave side, because the bank there heads it off, and turns it in a new direction. After taking this new direction it keeps it until a bend on the other side turns its again. Between these two points of course the main current must cross the general bed of the stream, and it is here that a decrease in velocity causes deposit. In these spaces between the bends islands frequently divide the stream into several channels. One of these, which should be three-fifths of a mile or more in width, is selected, and the other channels are closed. The agent depended upon for this is simply the water itself; by driving piles across the channel to be closed, and weaving poles and brush among, or placing mattresses of wattling against the piles, the flow is very much retarded, and a deposit of sediment begins, and in most cases two or three seasons will raise the surface a little above low-water mark. Then a spontaneous growth of willow binds and preserves the new bank.

To stop the undermining and washing away of the bank on the concave side of a bend — for of course this eroded material will be deposited as sediment somewhere below, and probably help build bars — the same use is made of piles driven in front of the endangered bank and some distance out in the stream. They are often driven through twenty feet of water, and the same depth into the mud below. Against them and among them are woven the poles and wattling mattresses. The piles are driven by hydraulic pressure, and the banks which they guard are also graded down to a suitably gentle slope by the action of water which, properly forced in jets, grades for 3½ cents per cubic yard, when the same work done by hand would cost from 12 to 20 cents.

These wattling mattresses are woven by steam to any length desired, with willow brush for woof, and large poles, iron-rods, or wire for warp, in boats as long as the width of the mattress. These curious boats are anchored across the current, and as the mattress, often 150 feet wide, and from 200 to several thousand feet long, is woven, it floats overboard and down stream. When in place, its inner edge rests on the under water edge of the bank, and its outer edge is supported at a height just a little below low-water level. It is held in place by stones. The mattress stops undermining below water, and the grading down of the bank stops it above. Up to the line of willow growth a covering of loose stones helps to hold the bank, and above that line, of course, the willows are the chief reliance.

A word as to the difference in the treatment of ordinary floods, such as may be expected every year, and such extraordinary ones as those of the last two or three years. The Commission believes that it is best not to allow the river to open new channels in ordinary floods, but to confine it within banks, so that it shall scour out the channel when it is shallow. But with an extraordinary flood, the plan is to open for it such new channels as shall, with the least damage, reduce the stage of water, so that levees and the plantations behind them may not be ruined. This work to be effective must be done upon a scale large enough to take in hand simultaneously an entire front needing treatment, otherwise the water may get in behind the work done and tear it out. The plant already designed and constructed, although not yet adequate, has cost over a million of dollars. There are the steam mattress-boats, snag-boats, floating machine and repair shops, and boarding-houses capable of accommodating 2,000 men; coal, stone, and brush barges, pile-drivers, etc.; 333 boats in all.

The success of the work has been very great. In one chute, Elmo, which had to be closed, there has been a deposit on the average of 6½ feet, covering 500 acres; in another, 5½ feet, covering 240 acres, and so of many others. The partial closing of these chutes already has greatly increased the flow in the main channels, and has cut down bars from six to ten feet. The deposit produced by the obstruction across Baleshed chute was 33,000,000 cubic yards. A depth of fifteen feet was maintained during a time of unusually low water in the thirty-five miles of the Lake Providence reach, so that for the first time the immense boat *J. M. White* was able to make regular trips during the entire season.

There seems no reason to doubt that this work has been done efficiently, on sound principles, and economically, and that it has been kept out of politics is a necessary corollary. When the country about the headwaters of the tributary streams, and especially of "Old Muddy" the Missouri, becomes settled, and a more enlightened public opinion insists that all land liable to the eroding action of water shall be kept covered with forests, and that the concave banks of river bends shall be protected by face-works similar to that described above, rivers will not be so loaded with mud. Until then such work as that done by this commission will be a continuing necessity. — *New York Evening Post.*

THE DRAINAGE OF DWELLINGS.[1]

WHOSE who wish really to learn about a given subject, and not merely to acquire a set of technical terms and phrases for the purpose of impressing other people with a false idea of their knowledge, should bear always in mind the golden rule of the student, to read books written by persons who know what they are writing about, and leave carefully alone those compilations, popularizations and abreviations constructed by professional book-makers out of a mass of mingled information and misinformation, which they do not know how to sift or make useful. In no branch of science are works of the latter kind more numerous than in that of sanitation, and it is with real relief that after the perusal of so many books and papers devoted to the comic, the enthusiastic, the educational and the astute misrepresentation of the subject, we come across a book so thoroughly sincere and practical as this of Mr. Gerhard's, every page of which, from one cover to the other, shows the unmistakable mark, not of the ordinary pseudo-scientific writer, lavish of the technical terms which he hopes may conceal his ignorance from his readers, but of the thorough master of his business, anxious to impart as much as possible of his own knowledge, in the plainest words and with the simplest illustrations.

In speaking thus of the book we give it the highest praise that, in our judgment, can be accorded to a technical work; and if we find here and there a point which we think might be improved in a later edition, it must be understood that this does not in the least affect our opinion of it as being the best manual of modern house-drainage work for the use of non-professional persons yet published.

To take up first the faults, small as they are, — we trust that in the next edition of the book the cuts will be improved. Fortunately for the student there are a great many of them, but the quality is extremely variable; some of them being borrowed from circulars or other books, and showing, in consequence, different styles of execution, while others seem to have been drawn expressly for the present work, and reproduced in a very coarse and unattractive manner. Rough as they are, however, they are clear, and the student in search of knowledge ought not to be fastidious.

We need not dwell long upon the introductory chapter, in which the objectionable character of sewer-gas, and the comparative advantages of pure air are adverted to with commendable brevity, Mr. Gerhard evidently preferring to get about his work with as little theorizing as possible. Six or eight pages are quite sufficient for his dealings with sanitation in the abstract, and on the ninth he plunges at once into the concrete, in the shape of a bath-room of the common type, whose nastiness he exhibits and explains as graphically as could be desired. This is always an excellent way of teaching the details of plumbing work, as a preliminary acquaintance with the foulness and feebleness of the sanitary appliances of fifteen years ago serves far better than anything else to make clear the intention of the improvements which have been subsequently introduced. After the general drift of sanitary effort has been pointed out, particular appliances are taken up, beginning with pipes and traps. Concerning the former there is not very much to be said, but we are glad to see Mr. Gerhard's confirmation of the remark so often made in these columns, — that unless the manufacture of cast-iron soil-pipe, particularly of the kind sold as double-thick, is speedily improved, architects and engineers who wish to get plumbing properly done will be compelled to adopt some other material for the purpose. In regard to traps, we are a little inclined to quarrel with Mr. Gerhard for describing and illustrating so many forms which, although common in England, are not to be procured here. As we know from experience, a young architect who likes to understand and control the drainage plans for his building is very likely to be led in this way into the mistake of providing access pipes, or intercepting traps, as an essential part of his system, for which he is subsequently compelled to devise make-shift substitutes with brick man-holes, and improvised combinations of common forms of drain-pipes, which are neither efficient nor cheap. It is not very easy, in writing on such subjects, to draw the line between articles which can and those which cannot be readily procured, but some indications on that point are of great value to those who read for the purpose of finding guidance in practical work.

From traps Mr. Gerhard passes on to drains, and these lead very naturally to sewage-disposal, cesspools and sewers. This subject is a little scattered, the evils of vicious methods being shown in one chapter, while the newer and better ways are treated of in another, in a different part of the book. Considered together, the two chapters form an excellent treatise on sewage-disposal on a small scale, and this alone would make the book of value to all householders in places beyond the reach of regular sewers. It is hardly

[1] "*Hints on the Drainage and Sewerage of Dwellings*," by Wm. Paul Gerhard, Civil Engineer. New York: William T. Comstock, 6 Astor Place. 1884.

necessary to say that Mr. Gerhard totally condemns the leaching cesspool, and advocates subsoil-irrigation as a substitute, giving a good deal of detail in regard to the best way of planning an irrigation system, which is all the more valuable for being put forward without any of that questionable enthusiasm which does so much to discredit innovations of this kind. Indeed, we think that Mr. Gerhard might have been a little warmer in his commendation of disposal by subsoil irrigation without outstepping the bounds of the strictest moderation. For instance, in speaking of the soils best suited to such treatment, he informs us that "the system works best in a sandy or gravelly loam, but even in heavy clay soil it has been used with tolerable success." We should be inclined, from one point of view, to invert this, and to say that the merits of subsoil irrigation, and especially its superiority to the leaching cesspool, were more apparent in a heavy clay soil than in any other. In fact, for country houses well supplied with plumbing, which have the misfortune to be situated upon small lots in a stiff clay soil, we believe from some little experience that this system furnishes the only practicable relief from the intolerable annoyance of cesspools continually choked, and running over or backing up filth into the house. Even in the most compact clay, the soil near the surface is more or less friable and absorbent, while grass grows with such vigor upon it as to increase materially its capacity for taking up sewage; so that, if a sufficient extent of absorptive pipe is provided, we have never known serious difficulty in disposing of house waste, with, at the worst an annual inspection of some of the lines of pipe, in ground which was nearly water-tight three feet below the sod, so that an ordinary leaching cesspool would fill up every two or three weeks.

The sewers, cesspools and traps disposed of, Mr. Gerhard expatiates upon the "internal drainage" of the house, into the details of which we will not attempt to follow him. It is enough to say that every variety of plumbing appliance which the architect can safely use, including some which, though not yet found in our market, give valuable indications of the course of improvement, is here described with admirable intelligence and discretion.

No matter how ignorant of the subject, or of the technical terms, the reader may be, he cannot fail to understand everything that the book contains, and, on the contrary, no matter how skilful and experienced he may be, he is certain to find much that will be interesting and valuable to him.

THE MEDIÆVAL ARCHITECTURE OF BRABANT.[1]

WE have here a dozen numbers of an architectural work, whose chief interest is perhaps archæological, but which has its attraction also from an artistic point of view. The book describes in detail a series of buildings, mostly churches, of which we know no full record elsewhere,—mediæval buildings in the smaller towns in the valley of the Meuse, about Liège and Aix-la-Chapelle, and on the borders of the old duchies of Lorraine and Brabant. With them is given a variety of ornamental work in stone, wood, and metal, from sources in the same region. The plates are simply and clearly drawn to scale, with apparent accuracy, and a fulness which is excellent for historical comparison, or for the imitation for which the author, perhaps too fondly, offers them. The careful letter-press comment shows labor of love, and if this elaborate collection of data does not always fix the history of the buildings as they are shown, that is no more than happens with others that are more important and better known. German ecclesiastical history is full of precise notices of foundings, consecrations, burnings, pillagings, and rebuildings: it would seem that nothing could be easier than with building and comment juxtaposed to make out a clear account of what is left to us of all the noted examples. But when it comes to fitting the buildings and the commentaries to each other, it is found so far from easy to say what relates to what, that the cases are comparatively rare in which the student can make sure of an unquestioned date for existing work; often he finds the judgments of his authorities centuries apart.

The churches here represented are comparatively small and simple, as is natural in towns of no great wealth or political importance; but two or three of them (those at Aldeneyk, Süsteren, St. Odilienberg), are worth an architect's attention, for the simple charm of proportion and arrangement, and all have a value in the study of architectural history. As might be supposed, they are German in character; only in one (Aldeneyk) do we find suggestions of French detail in the capitals, corbels, and string-courses of the choir, which show the crocket forms of the thirteenth century. Their period varies apparently from the eleventh century — the author even says the tenth — to the fourteenth. The most interesting, naturally, are the oldest. In these we find the peculiar frontispiece, as it were, of the early German churches, hiding nave and aisles; in Süsteren with two western towers, in Alderney with one, and in this last case the form, well known on the Rhine, of four gables leading into a pyramidal roof set diagonally on the tower. We also find (at Süsteren) the arrangement better known in Saxon churches (Quedlinburg, Gernrode), of piers and columns alternating in the main arcades, the columns, as in Heiningen and Echternach for example, carrying subarches under a relieving arch that spans from pier to pier, one of the best types that German Romanesque evolved. The columns bear the early German form of cushion-capital, the so-called *würfel-knauf*, and the shafts apparently have no taper. This church, which is substantially of one period, being the oldest and on the whole the most interesting, has also, in the choir arcades, an isolated pair of pseudo-Corinthian capitals, such as would hardly be found farther east in Germany, so closely do they sketch the capital of the original order, the two rows of leaves, the volutes, the *caulicoli*, and even the rosettes being all present, blocked out in rudimentary unindented form.

The plans approach the typical Italo-German form, the more complete having nave and aisles, transepts, and now one apsidal chapel, now three. In the church of St. Odilienberg, which its Prior in 1614 called "the oldest monument in the country," but which has passed through vicissitudes that hardly leave anything older than the twelfth century visible in Mr. Fisenne's drawings, we find in plan a singular arrangement, the two slender towers that flank the central apse being so wedged in, as it were, that they thrust aside the lateral apses. Unfortunately it is not in all cases so easy to eliminate from the drawings the modern restorations accomplished or proposed as to picture the original aspect of the church. One thing that deserves mention in speaking of this church is the discovery, under the pavement, of the foundations and other fragments of two *ambones*, the only ones, we believe the author is justified in saying, that have been found north of the Alps.

Two churches of the fourteenth century, the Dominican church at Maastricht, and the parish church of Cornelimünster, show in a simple way the type adopted at that period in the low countries; the round pillars instead of clustered piers, the simulated triforium in panels running up to the clerestory sills, but here with stone vaulting, which one is by no means sure of finding even in the important churches of Holland. A queer slice of building called the Old Rathhaus of Maastricht, and a shrine or *sacraments häuslein* from the old priory at Meersen, almost as elaborate as the famous one in St. Lawrence at Nuremberg, are perhaps the most interesting things among the other numbers, which contain in considerable abundance the kind of native Gothic detail that is more admired in Germany than out of it.

[1] *Kunstdenkmäle Des Mittel Alters.* ["*L'Art Monumentale du Moyen-age*"], Aufgenommen und gezeichnet von L. von Fisenne, Series I, Nos. 1-6; Ditto, Series II, Nos. 1-6. Aachen [Aix-la-Chapelle], Rudolf Barth, 4to. German and French text and plates.

THE ILLUSTRATIONS.

OLD HOUSES AT PERIGUEUX, FRANCE.

HOUSE OF W. H. JEWETT, ESQ., MONTCLAIR, N. J. MR. A. F. OAKEY, ARCHITECT, NEW YORK, N. Y.

ALTERATIONS TO HOUSE AT HINGHAM, MASS. MR. C. S. LUCE, ARCHITECT, NEWPORT, R. I.

CAPILLA MAYOR, TARRAGONA CATHEDRAL, SPAIN. SKETCHED BY MR. R. W. GIBSON, ARCHITECT, ALBANY, N. Y.

FOR description see article on "Spanish Architecture."

HOUSES NO. 272 MARLBOROUGH STREET AND NO. 282 NEWBURY STREET, BOSTON, MASS. MR. W. W. LEWIS, ARCHITECT, BOSTON, MASS.

CONCRETE FOR MARINE CONSTRUCTIONS.

IN the Aberdeen Breakwater and the Harbor Works at Brest, concrete blocks of moderate dimensions were adopted, weighing in the former case from 7½ tons to 24 tons, and in the latter 100 tons each.

As an example of the use of extremely large blocks, a short reference may be made to the manner in which a considerable length of deep-water quay wall has been constructed at Dublin. The position of the works is extremely well sheltered, and interruptions due to bad weather are consequently reduced to a minimum. The contents of each block averages about 193 cubic yards, which at 14 cubic feet to the ton, gives a weight of about 370 tons. Each block is about 29 feet in height, and is built in wooden casings to the section of the wall, battered on the face, and with horizontal offsets at the back, each block representing 12 lineal feet of quay wall built to a level of 3 feet above low water. The blocks consist of rubble masonry set in cement concrete, guaged in the proportion of one part Portland cement to seven parts sand, and very coarse gravel or shingle, and are built upon a specially constructed wharf at a short distance from the site they are intended to occupy permanently. A block takes from three to four weeks to build, and is considered sufficiently consolidated to move after ten weeks. A large iron pontoon or float, also of special construction, is used for lifting and transporting the blocks. This pontoon is 130 feet in length, 48 feet wide, and 14 feet deep, and is provided with two pairs of massive and lofty shears-legs, one pair forward, the other aft. The cross-head of the former, which is 54 feet above the deck of the pontoon, carries two sets of heavy four-sheaved pulleys, through each of which, and a corresponding pair of hanging pulleys, a pitch chain is reeved. The lower pair of pulley-blocks are furnished with projections which grip the upper

tee-heads of four round iron suspension-bars passing through the masonry, and provided with tee-heads on their lower extremities, bearing on cast-iron girders or washers built into the bottom of the block.

The after shear-legs support a counterbalance consisting of a tank filled partly with concrete, and partly with water; the latter, by being pumped into or out of the tank, affords the principal means of lifting and setting the blocks in their position. The first part of the lowering, however, is accomplished by means of the pitch chain already mentioned, which is connected to powerful crab winches on the deck of the pontoon. These winches, together with a centrifugal pump and several surging-heads, are driven by a 14, nominal, horse-power engine.

The foundation for the blocks is prepared first by dredging, the excavation being subsequently completed, and the bottom very carefully levelled by means of a large diving-bell, which is also of special construction, and consists of a cast-iron chamber 20 feet square, and 6 feet 6 inches inside height, with a vertical tube and air-lock. The bell or chamber is suspended from a suitable shears placed on an iron float containing the engine, air-pumps, winches, etc. With a diving chamber of this description, the bottom — which when ready for the block is about 26 feet below low water, and has an area of about 250 square feet — can be levelled with the great accuracy absolutely necessary for the satisfactory setting of such large blocks in quay walls where irregularities in the face are inadmissible.

With the aid of the special appliances above described, an average of 400 lineal feet of blocks per year can be laid in still water, which is equivalent to 6500 cubic yards, or allowing 300 working days to the year, about 22 cubic yards per day. The actual progress has been somewhat less (about 364 lineal feet per annum) owing to slight interruptions of various kinds.

The cost for the special plant required for the lifting, transporting, and setting of the blocks has been as follows: —

Floating shears	£18,783
Block wharf	4,610
Chain-testing machine, moorings, and sundry small items, about	2,607
Total	£26,000

The cost of the blocks standing on the wharf is given as £16 per lineal foot, or about 19 *s.* 8 *d.* per cubic yard for labor and materials.

Lifting, transporting, and setting the blocks, including maintenance of shears, float, and block-wharf, also shifting moorings, etc., has been £3 10 *s.* per lineal foot of block, or say, 4 *s.* 4 *d.* per cubic yard. If interest at 5 per cent per annum be added to the cost of the plant (£26,000) and one-fourth the first cost deducted as the approximate selling value of the plant, at the end of five years, the proportion of cost of special plant will be 16 *s.* per cubic yard, and similarly at the end of ten years, 10 *s.* per cubic yard, and at the end of fifteen years, 8 *s.* per cubic yard.

Summarizing these results for convenience of comparison, the cost of the various items connected with the block-work is as follows: —

	£.	*s.*	*d.*	
Quantity of block-work deposited in place per year	6,500 c. yds.			
Approximate cost of special plant required for manipulating the blocks	£26,000			
Cost of blocks, materials, and labor	0	19	8	p. c. yd.
Lifting, transporting, and setting of blocks, including maintenance of float and block-wharf	0	4	4	"
Proportion of cost of special plant at end of five years	0	16	0	"
Proportion of cost of special plant at end of ten years	0	10	0	"
Proportion of cost of special plant at end of fifteen years	0	8	0	"
Total cost at end of ten years' work, exclusive of cost of levelling foundations	1	14	0	"
Total cost at end of fifteen years' work	1	12	0	"

The large size of the blocks used at Dublin involved the levelling of the foundation with great care and accuracy; for this purpose the large diving-chamber before described has been found to work satisfactorily; its cost, however, was considerable, amounting to £5,454, which would preclude its use on any but works of considerable extent. The cost of excavation, including the maintenance of bell, float, and machinery, is given at £3 per lineal foot of block, which is equivalent to about 3 *s.* 8 *d.* per cubic yard of block-work. If to this is added the proportion of the cost of this item of special plant, after fifteen years of continuous work, which amounts to about 1 *s.* 8 *d.* per cubic yard of block, the total cost of excavating and preparing the foundations will be about 5 *s.* 4 *d.* per cubic yard of block-work, or about £51 per block.

The details of the system adopted at Dublin have been most carefully elaborated by Mr. B. Stoney, the engineer of the works, from whose valuable paper on the subject most of the preceding information has been extracted.

The breakwater at Kustendjie, on the western shore of the Black Sea, affords an instance of the successful use of 30-ton concrete blocks. Each block is 6 feet high by 5 feet wide, and of a length equal to the width of the breakwater, which is 18 feet at the bottom, and 12 feet at the top; the blocks are laid with a slope towards the shore of 45 degrees from the vertical, somewhat similar to those used in the Manora breakwater at Kurrachee (which will be subsequently referred to), and laid on a similar foundation of loose rubble stone. The concrete used at Kustendjie consisted of the following:

	Parts.
Broken stone	5½
Sharp sand	2½
Portland cement	1

Taper bolts 2 inches in diameter were used to lift and lower the blocks, the nuts and washers remaining permanently in the block; this arrangement, however, does not compare favorably with that adopted at Dublin and elsewhere. The blocks were lifted and set, by means of a timber gantry carrying a travelling winch. The foundation was first roughly levelled, and the operation subsequently completed by divers with the aid of iron set squares. The cost of this breakwater is not given, so that the method of construction employed cannot be compared in this respect with those already referred to.

The blocks were lowered into their places when from twelve to fourteen days old. — *Engineering.*

SANITARY PLUMBING.[1] — XXVII.

II. THE SLEEVE-JOINT.

THE object of the sleeve-joint is to form a connection between pipes having plain ends without flanges, hubs, threading or projections of any kind. The first division under this class is: —

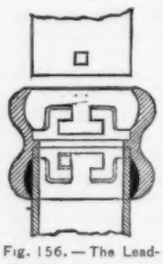

Fig. 156. — The Lead-Packing Sleeve-Joint.

(*a*) *The Lead-Packing Sleeve-Joint* illustrated in Figure 156. This joint was devised for use with wrought-iron pipes in which it was desired to form connections like those on ordinary cast-iron bell-and-spigot pipes and avoid weakening the pipe by thread-cutting. It produces an even, smooth interior, of the same diameter with the pipe, and could be made to form in part a rust joint. The lugs, or rivets on the ends of the pipe, engage in the recesses in the couplings, and form a resistance to longitudinal strain. The joint can be calked like the ordinary bell-and-spigot joint, though the space around the spigot is somewhat smaller than in the latter.

(*b*) *The Plain-Ring Sleeve-Joint.*

Figure 157 shows a lead-packed joint designed to be made with lead in its cold state, aided by cement. The joint is somewhat complicated and difficult to make. It is composed of a leaden ring of peculiar construction, two cast-iron coupling-rings, cement for solidifying the joint, and a hoop for covering the coupling-rings. The leaden ring is a band of milled or rolled sheet-lead with a groove in the centre. To form the ring, the band is cut to the length corresponding with the outer circumference of the pipes to be connected. It is then bent into the form of a ring, and the two ends are soldered or burned together by means of a blow-pipe. The ring is placed over the ends of the pipes and pressed tightly against it by light blows of a hammer, or by means of a metallic band with pincers, or by a cramp in such a manner that the lead shall be thoroughly embedded on each pipe. In the groove in the leaden ring temporary sheet-iron discs, formed in two parts and held together by hooks, are then placed. The two coupling-rings are then pushed against the disc, which by resisting allows of and facilitates the junction, at the same time preventing the groove from being flattened or closed. The junction being completed, the disc is removed and the outer hoop is placed over the whole, and cement is put in the empty spaces between the coupling-rings and the pipes beyond the lead ring. The groove in the leaden ring is designed for the purpose of giving a certain flexibility to the joint, and allowing of expansion and contraction of the pipes, but it is nevertheless subject, in this respect, to the same criticisms as we have made in regard to the lead-packed bell-and-spigot joints.

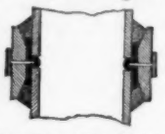

Fig. 157. — The Plain-Ring Sleeve-Joint.

Figures 158 and 159 represent a sleeve-joint in which rubber is used for packing. A hollow cylinder or shell is constructed of brass, iron or wood, and has belts cast upon it for additional strength. The ends are bevelled or inclined inwards towards the pipe, so as to contract the opening for the insertion of the pipe, and to form recesses into which are forced annular conical India-rubber rings or other similar packings, which may have any desired angle. These rings or packing are so formed that when internal pressure is applied they press against the contracted ends of the cylinder to form a tight joint. Webs are provided within the cylinder to give rigidity to the joint, but when flexibility is desired, the webs are omitted.

Fig. 158.

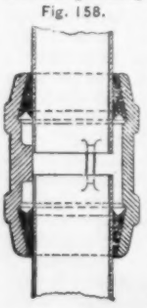

Fig. 159. — Sleeve-Joint with Rubber Packing.

Figure 160 shows one side of a pipe having a cold lead packing-ring. The pipe is shown in elevation and the packing and clamping rings in section. The ends of the pipe are here provided with slight enlargements or collars. A strip of lead, shaped to fit the enlarged ends, and having a central rib underneath to project into a space left between the ends of the pipes, is lapped around so as to embrace the ends of the pipes. A circular band or collar is then tightened round the lead by a "press collar," and finally all is secured by binding-rings. The ends of the pipes abut against the central rib of the lead and prevent

Fig. 160. Sleeve-Joint with Cold-Lead Ring.

[1] Continued from page 32, No. 447.

No. 445 American Architect and Building News, July 26 1884

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House No. 282 Newbury St.

House No. 272 Marlborough St.

Boston Mass.
W. W. Lewis, Architect.

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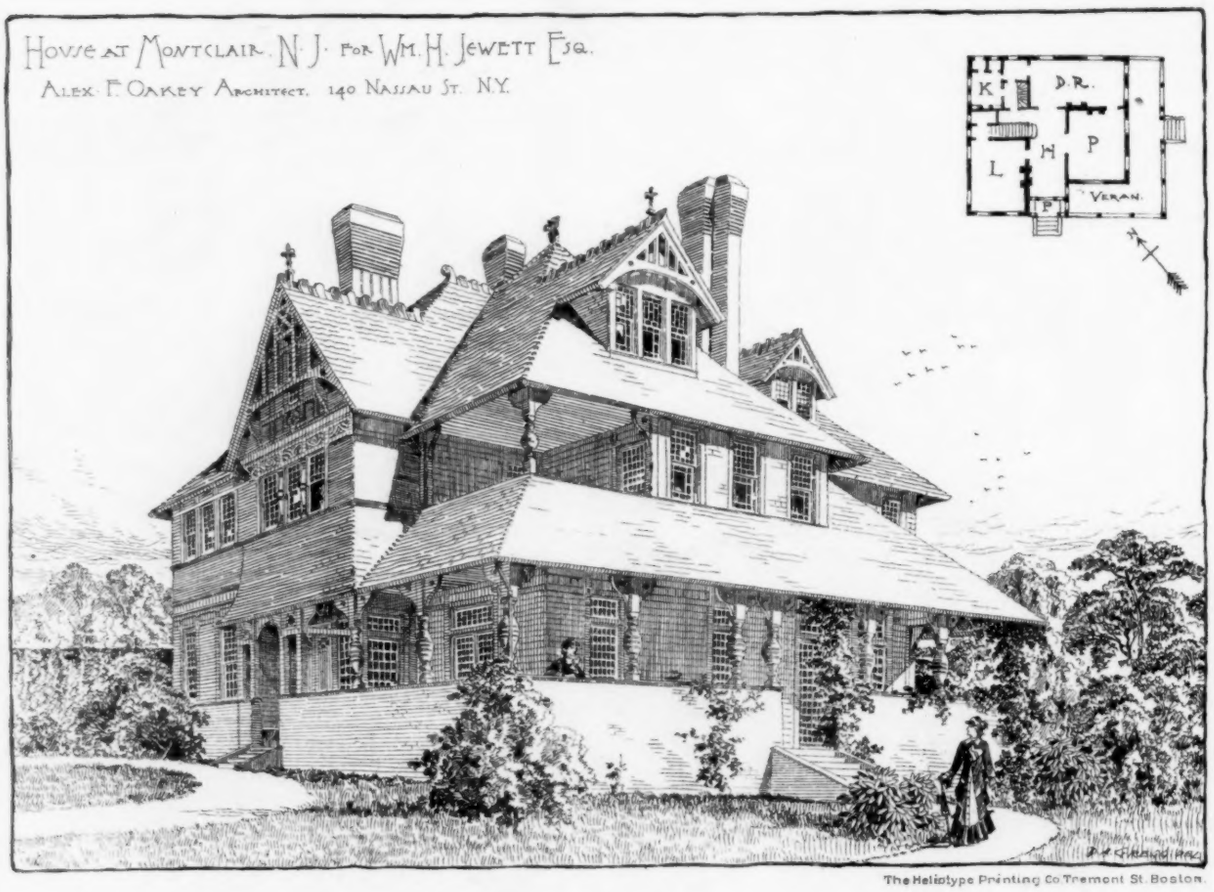
House at Hingham, Mass. Alterations by C. S. Luce.

House at Montclair, N.J. for Wm. H. Jewett Esq.
Alex. P. Oakey Architect. 140 Nassau St. N.Y.



The Heliotype Printing Co Tremont St. Boston.

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Old Houses
At
Perigueux
France

H. P. Kirby.
Drawn from a photo

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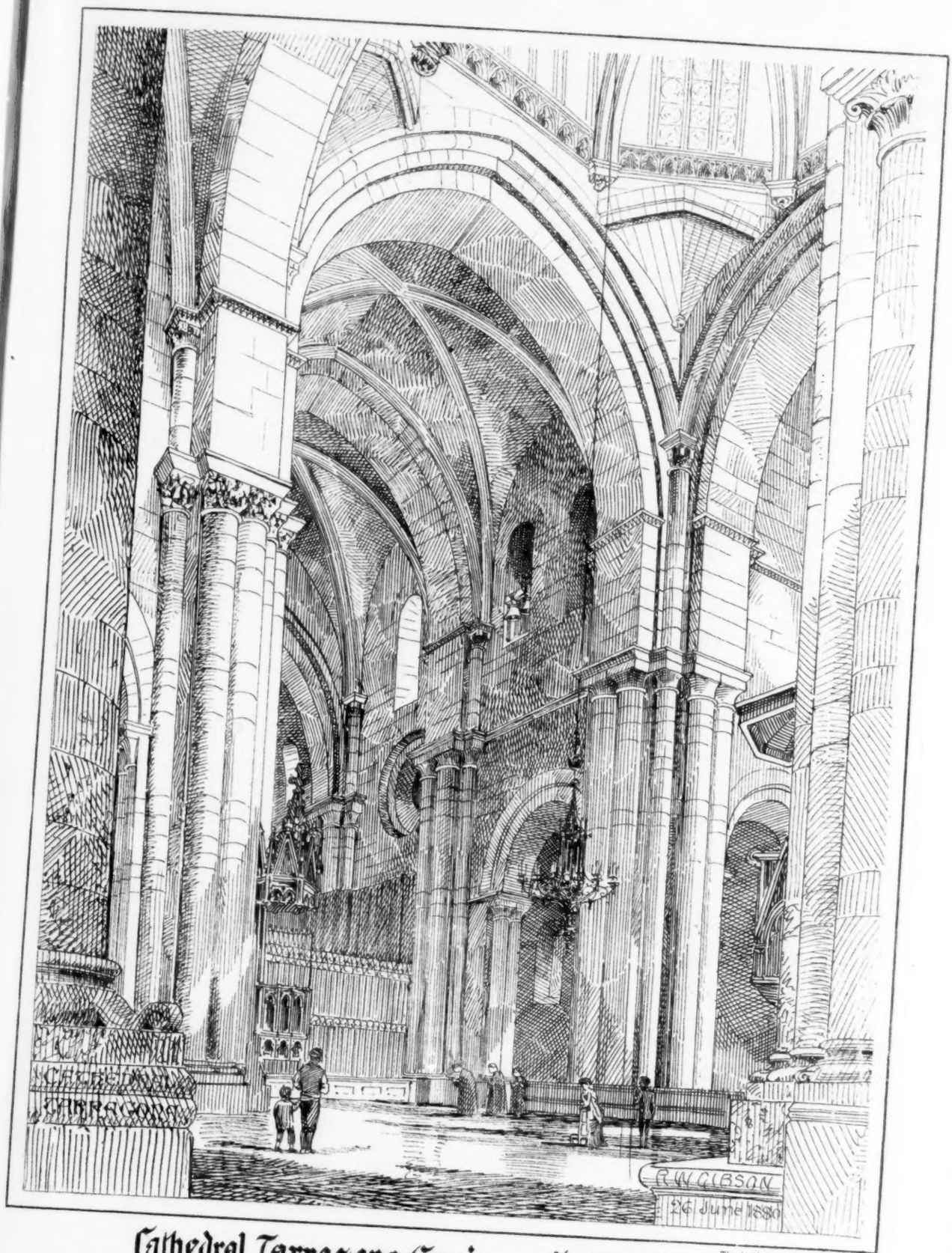


Cathedral Tarragona Spain : Capilla Mayor.

The Heliotype Printing Co. Boston.

shifting of the packing when the binding rings are driven on. These rings are formed to fit the outer surface of the pipe, in order that their binding pressure may be equally distributed.

Figure 161 shows a sleeve-joint in which the ends of the pipe are grooved or corrugated and connected by means of a lead ring compressed into the corrugations. This lead ring is of double conical form externally, and has at the middle of its length an internal annular rib which forms an abutment for the ends of the pipes to be coupled. The joint is completed by forcing over the opposite ends of the leaden sleeve, conical clamping-rings, which, when driven home by means of a hammer or cramp, will compress the lead into the annular grooves. Collars, brackets or ears may be cast on the pipes at some little distance from the ends, to prevent injury to the joint or pipe in ramming the earth about it when it is used under ground.

Fig. 161.—Sleeve-Joint with corrugated Pipe-ends and cast-Lead Ring.

Figures 162 and 163 show a sleeve-joint in which a rubber band is used for packing, secured by means of an elastic metallic strap. The India-rubber in a broad band is made to embrace the two ends of the pipes. Over the band is then placed a metallic strap, which is drawn together by means of screws or wedges. The tightening of the strap forces the India-rubber band into a number of annular grooves with which the strap or the ends of the pipe are furnished.

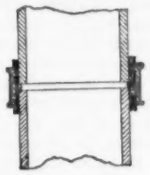


Fig. 162.

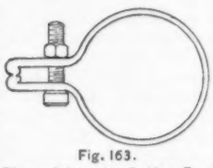


Fig. 163. Sleeve-Joint with Rubber Band secured by wrought-iron Strap.

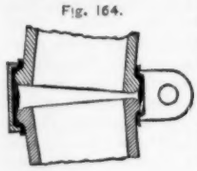


Fig. 164.

Fig. 165. Sleeve-Joint with bevelled Collar.

Figures 164 and 165 show a joint similar to the last, except that a small bead is formed on the ends of the pipes, and the sleeve is bevelled, or wider on one side than on the other, to enable the pipes to be connected on an angle. The edges of the metallic collar used to compress and hold the rubber packing sleeve are turned down, as shown, so as to bring the packing close down over the beads. The collar is strained on by means of a bolt and nut, in the same manner with that in the joint preceding.

Figure 166 shows a sleeve-joint for cement or melted-lead packing. A movable or shifting sleeve or jacket is placed over the ends of the pipes, and has openings for the introduction of the packing. The ends of the pipes are grooved, and corresponding grooves are cast on the inside of the sleeve. These are intended to protect the pipes from longitudinal movement. The joint is bulky and expensive.

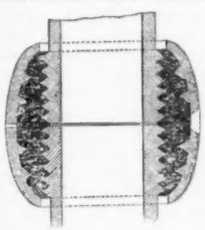


Fig. 166.—Sleeve-Joint for Cement or melted-Lead Packing.

(*c*) *The Divided-Ring Sleeve-Joint.*

Figures 167, 168 and 169 represent a sleeve-joint connected by means of half-rings bolted together. The general principle of this consists in lapping soft metallic or leaden packing round the meeting ends of the pipes, and forcing this packing into intimate contact with the surface of the pipes, by means of a screw clip or hinged collar, the pipe-ends externally, and the packing internally having annular grooves and ribs, which respectively bed the ribs on the pipes into the grooves in the packing, and *vice versa*, when the hinged collar or clip is temporarily closed around them by a screw. The collar is afterwards removed, and a hoop of wrought-iron, slightly conical internally, is driven on over the lead. Instead of using the lead alone, India-rubber may be used in connection therewith; the lead packing may be made conical to correspond with the collar and hoop, and the annular grooves and ribs on the pipe-ends may, of course, have an endless variety of shapes.

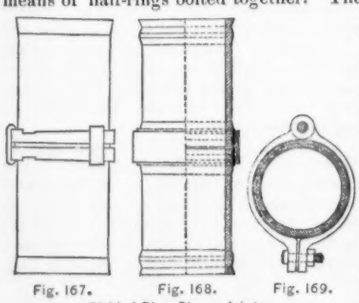


Fig. 167. Fig. 168. Fig. 169. Divided-Ring Sleeve-Joints.

The use of divided rings and bolts enables the joint to be easily disconnected at any time. In Figure 170, the ends of the pipes have formed on them annular ribs or projections with intermediate grooves, and over these ends a vulcanized India-rubber belt is compressed by means of a metallic collar made in halves, and bolted as shown. The collar has corrugations corresponding with those on the pipes.

In this joint, Figures 171 and 172, the divided ring is clamped together in a different manner from the preceding, and the pipe-ends are entirely plain. The clamps are provided with internal ribs, and their uniting surfaces have projections and corresponding recesses to prevent misplacement, and the escape of the packing into the pipe under pressure. A packing of lead or other suitable material placed between the pipes and the collar, and between the two halves of the collar forms the joint by compression. In each end of the half-collars there is a depression or cavity, forming together, when the two half-collars are united, a box or chamber in which a piece or block of India-rubber is inserted and compressed. This closes the open space left between the ends of the half-rings, and prevents injury to it when the rings are drawn together.

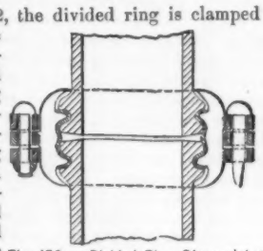


Fig. 170.—Divided-Ring Sleeve-joint with double Bolt.

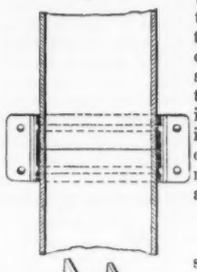


Fig. 171.

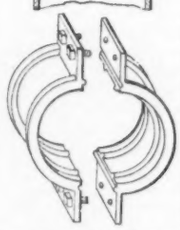


Fig. 172.—Divided Ring Sleeve-Joint.

(*d*) *The Bolted-Ring Sleeve-Joint.*

In the three accompanying figures, three separate rings are employed, and they are secured together by long bolts. The pipe-ends are quite plain. Two loose collars are slid, one on the end of each pipe. Then two annular packing-rings are slid on, one against the end of each collar, and next upon one of the pipes is slid a flat tubular ring. When the two pipes are placed end to end the ring is slid back over the joint one-half on one pipe, and the other half on the other, so that the tubular-ring covers the junction. By means of nut-bolts the two collars are then drawn towards each other, and the annular packings thereby compressed between them and the ends of the intermediate tubular-ring, and forced to expand laterally into close contact respectively with the surfaces of the two pipes forming the joint. The annular packings may be of vulcanized India-rubber, and made smaller in diameter than the ends of the pipes in order that they may have a tendency to close tightly round them, or a gasket saturated with tallow or red-lead in a plastic state may be employed.

In one form of the device the tubular collar has its ends enlarged so as to form sockets to receive the packing-rings, and the loose collars have corresponding shoulders cast upon them to enter the sockets, and press the packing-rings against the pipes.

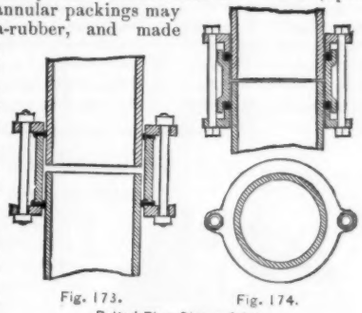


Fig. 173. Fig. 174. Bolted-Ring Sleeve-Joint.

III. — SCREW-JOINTS.

The screw-joint possesses great advantages over bell-and-spigot or sleeve-joints in being perfectly and permanently *tight* when made, provided the threading is of the proper kind. It is capable of withstanding the effects of expansion and contraction, and of all kinds of strains as well as of jars and settlement in the building, and it is compact, occupying really the minimum of space in a building.

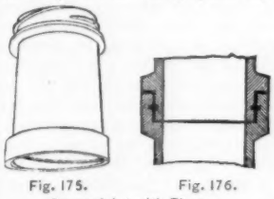


Fig. 175. Fig. 176. Screw-Joint with Flanges.

(*a*) Figures 175 and 176 represent the first class of screw-joints which we have designated as the *flanged screw-joint*. Its important feature consists in casting or constructing upon the spigot-end of a pipe two or more threads, the inside of the socket of the pipe to which it is attached being cast with corresponding grooves. There is also a collar formed on the spigot-end.

The complete joint is formed by covering the spigot and socket ends of the pipe with a layer of cement or other quick-setting substance of a like character, and screwing the two pipes together. By a slight turn or rotation of the pipes or either of them on their axis the connection is made.

Instead of casting or otherwise permanently attaching the threads upon the spigot-end of the pipe, the pipe may be moulded without threads, but instead with suitable grooves in which threads of steel, iron, or other suitable material are afterwards placed and secured.

The threading on this joint is, from its nature, too coarse to form a perfectly reliable joint under heavy pressure.

Figure 177 shows another form of flanged screw-joint, the threaded parts being on detachable sleeves. This joint might be included with equal propriety under the preceding class of sleeve-joints, inasmuch as its tightness is dependent rather upon rust or other packing between the sleeve and the pipes, than upon the threading. But inasmuch as the rust makes the pipe and its sleeve practically one piece, the joints becomes ultimately a true screw-joint. The joint illustrated in the figure is particularly intended for the connecting of soft-metal pipes, the pipes shown being practically "tail-pieces." A nut or loose collar, screw-threaded externally is passed over the end of each of the two pipes, and then by any convenient means, such as the forcing in of a conical plug, the pipe-ends are caused to expand, and the extreme end of each pipe is hammered out to form a flange against the end or annular surface of the collar. An internally-threaded annular band is screwed half its length on the collar of one pipe, and the collar on the other pipe is screwed into the other half length of the band until the soft metal ends come together tightly enough to form the joint.

Fig. 177. — Screw-Joint with Flanges and Sleeves.

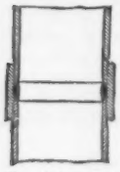


Fig. 178. — The Inner-Ring Screw-Joint.

In Figure 178 a simple form of screw-joint is shown, having as its object better resistance against pressure. The novel feature is the use of a metal ring inside the two ends of the pipes where the joint is formed, in connection with a packing-ring of suitable material. The end of the pipes are drawn together by means of a separate threaded ring or rings. The inside metal ring is bevelled slightly on the two edges, and the inner edges of the pipe-ends are bevelled to correspond so that the ring can only pass a little way into the pipes. By screwing the two ends of the pipe together, the packing is compressed against this inner ring, and the joint is formed.

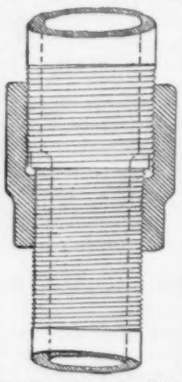
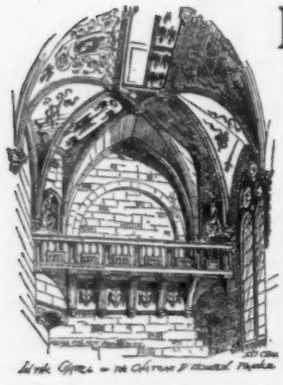


Fig. 179.—The Outer-Ring Screw-Joint.

Fig. 179 shows what we have called "the *Outer-Ring Screw-Joint*." It differs from the ordinary coupling-ring or collar, in having the ends differentially threaded to correspond with similar threading on the pipes. In other words, the pitch of the screw-threads on each pipe-end is different. When the collar is turned round it advances more quickly on one pipe than on the other, thus causing the pipes to approach each other, and come into tight contact.

STAIRCASES.[1]— VI.

CONSTRUCTION.



IN the construction of ordinary geometrical stairs — that is, of stairs having only one end supported in a wall with the lower edge of every upper step attached to the tread of the one next below it, so as to prevent vertical or inclined descent—it is essential that safety and security both in appearance and reality be provided. The principle, says Gwilt, is "that every body must be supported by three points placed out of a straight line, and, therefore, if two edges of a body in different directions be secured to another body, the two bodies will be immovable in respect to each other." In stone stairs safety and security are best attained by providing surrounding walls of sufficient strength, by giving each stone a grip of at least nine inches where possible, and by providing a liberal weight on the tail, or, where this is not practicable owing to openings over, by an iron beam passing over the top of the steps to prevent their tilting. The material selected should be hard, well-seasoned, fine-grained, durable and of homogeneous structure, free from fossil, shells or flaws, and from a good quarry, such as Craigleith, or the blue-gray bed of the Hailes.

If the step blocks have been quarried upright, the top part, as being the hardest and strongest, should be inserted in the wall, where, at the junction of the right-angled prism forming the step proper with the seat, the greatest strain or leverage is exerted. Each individual step of a geometrical stair has the back part of the upper edge worked at right angles to the plane of the soffit, called "bird's mouthing," piend, or "pen-checking," the corresponding part below being checked to fit over the upper ones. The thickness measured at the inner angle is proportioned to the length of projection, and is usually half an inch for each foot; the steps project from the wall, so that a step four feet long has two inches of check, and usually about one and three-fourths of an inch of rest or cover in. The ends in the supporting walls are left square as a seat; sometimes they project to increase the strength and enhance the appearance by showing a continuous stepped moulding along the wall, and they are firmly wedged in with slate, tile or oak, and have Portland cement grout run in to make the whole rigid. It is important that wedging or pinning-in should be carefully executed. We have found the necessary rigidity and security attained by the use of cast-iron tapered wedges. Each step has two inserted above the nose or strongest part, the thick end of one being first put in, and then the thin end of the other, the steps being kept a little slack on the outer nose of soffit or pen-check to enable one to be taken out without disturbing those above or below should it be broken by accident or carelessness. When the wedges are taken out, and the step is eased underneath, it can be very easily removed without affecting the general stability. If not tightly wedged up, the natural tendency of a step is, of course, to drop on the head, while some materials used for this purpose allow the steps after use to get slack and shake.

If iron be used, however, and a good stone inserted below, they remain immovable even under very heavy prolonged traffic. Tight wedging is also useful in preventing any settlement in a brick partition owing to the continuous vacancy of the stair raglet. The bottom step of upper flights should always start direct off an iron beam or other stable support; if a wall cannot be got, the lowest on the ground floor being slightly sunk to prevent its sliding on its bed, for though a certain measure of stability is owing to the rigidity of the first step, we have shown that each component part of the structure is to some extent independent, and able to support not only its own weight, but any moderate load that may be brought upon it. Stairs should not be built until the inclosing walls have settled and arrived at their bearings, the raggles to receive the steps being left built up in a temporary manner during the progress of the building. A portion of the wall above and below, and the steps themselves, should be built in cement mortar. Up to a width of six feet they are generally constructed of single stones; but, where this width is exceeded, or where narrower but subjected to severe usage, it is usual and necessary to support the ends on a wall, on raking iron beams, or on continuous raking arches with supporting piers, as in the example from Fuiances, Naples.

The greater the width the greater the leverage. It has been suggested, therefore (possibly from the example in the interior of the Orange Tower in Carpentras), to construct steps of any width of a pyramidal form of equal strength throughout, so as to form a bracket independent of any other support than the wall in which they are fixed. In long broad landings the central stones are formed of pieces wrought at the joints in the form of a long flat arch, or are joggle-jointed. Copper or slate dowels are also used. The plats should be well let under the jambs of doors, and supported where necessary by beams, iron brackets, or arches. Iron columns are inadmissible, as any expansion would nip the stones. In the case of intermediate landings where the upper flights start immediately off from them, and where only one end rests in a wall, great care should be exercised to support them well, as, interrupting as they do the continuity of the structure, they interfere with its stability, and where a sudden shock or vibration through a rush of persons occurring at a particular moment, coincident, perhaps, with a flaw or flaws in a step, may be the cause of disastrous failure. When constant traffic has gone on a stair for many years so as to wear down the central portion of the treads, what is technically called "piecing up" has to be resorted to. This should be cautiously done, perhaps with iron as a suitable material, the whole length of the steps. Cutting out a portion in the centre only weakens them to a measurable extent, and may — other circumstances being favorable — cause the stair to fall, as in the memorable example at the Polytechnic Institution twenty-five years ago, where a sudden vibratory shock took effect on the most vulnerable part, and set the whole collapse in motion. The pieced steps experimented on at the time were proved to break with a load of two and a half times less than unpieced ones.

Iron is being extensively used in the framework of staircases, as in a fine example at the Town Hall of Buda-Pest, in Austria. It is much used in the United States, with slate, tile, marble, or other material for the treads. On the construction of ordinary wood or newel stairs it is unnecessary to enter. Such is fully treated in Newland's and other works, while for setting out and other details reference may, in addition, be made to the works of Thierry, Normand, Merault, Goguet, Boutereau and Mahistre.

SITUATION.

The suitable and convenient disposition of a staircase has always been regarded as a difficult problem in interior architecture. In planning its situation much will depend on the object of the building and the purposes it is intended to serve. It may be noted that an idea of depth and spaciousness is secured by placing it well back from the entrance; of grand and impressive effect when it, along with the approach, are modelled after the examples of the Italian *palazzi;* and of cozy homeliness and picturesque feeling when it occupies a corner of a well-furnished and well-warmed hall, secluded from the entrance and arranged with the artistic eye of our forefathers of the sixteenth and seventeenth centuries. In dwelling-houses where the principal apartments are on the ground floor it will naturally be

[1] Concluded from No. 447, page 34.

modest in design and retired in position. Where these apartments are on the first floor its situation will be more evident, its importance enhanced, while its size and decoration will be proportioned to the scale of the building. Generally speaking, privacy is most desirable — in fact, essential for comfort, while that it be central, in convenient relation to the lines of thoroughfare and to the entrance is evident.

With the complicated department grouping of large mansions and public buildings arises the necessity for the careful subdivision of traffic. This points to the creation of subsidiary relieving stairs, which increase in number with the scale of the erection, and although their unnecessary multiplication is not to be recommended, there should be no hesitation in introducing them wherever traffic can be regulated or improved by their use. We need only further notice that in a town house it is most desirable to avoid the characteristic straight flight opposite the entrance door, either by reversing it, by placing the staircase crossways, or by some other method which the artistic instinct of a true planner will suggest for each special case, while it is nearly always advisable to carry the main stair up to the bedroom floors as materially enhancing their value.

FORM.

The form will be dictated by the purpose to be served, the taste of the designer, and the space set apart on the plan. Circular or elliptic stairs, unless large, are not advisable forms for the majority of purposes, and even then in elliptic examples it is difficult for the body to become used to the different radii. Wheeler says, "In practice oval staircases are tiresome if of continuous steps, for the body gets accustomed to the long sweep of the centre of the flight, and is embarrassed by the shorter radius at the turn, whereas with straight flights, even with winders at the turn, the change of motion is so abrupt that the limbs adopt it at once." When large, circular stairs are not so objectionable, provided the treads be properly proportioned to give a convenient treading line at the usual distance of eighteen inches from the hand-rail. This treading-line, however, can only be at one spot; resting-places are unsightly and break the continuity of the graceful sweep where used; but, otherwise, the swing of the body in mounting makes them easier in some respects than rectilinear ones of short flights. Good elliptic examples may be seen in Somerset House or the Ducal Palace at Genoa; good circular ones in the Palace of Caprarola or the numerous examples of Mediæval France. While variety in form may be made almost endless, for domestic purposes the simple, square, open newel is for nearly all purposes to be preferred.

Where windows are introduced they should not be radiated to the centre, but made to "dance," in order to preserve as good a width of tread at the newel as possible, where otherwise it would be narrow, uncomfortable, and dangerous. For a square stair, our master, Inigo Jones, at Ambresbury, in Wiltshire, has divided the space into four parts, two of which have been given to the stairs and two to the newel, which is a suitable proportion to observe. For circular or oval stairs Palladio directs that "with a solid newel the diameter should be divided into three parts, two being for the steps and one far the newel; where open, two for the steps and two for the newel, into seven, three being for the newel and four for the steps; while if the steps be circled they are handsomer and longer than when straight." In public buildings where the grand form of stair is used, consisting of a centre and two side flights, the width of the centre should equal the sum of the widths of the two sides, so as to accommodate the united streams of outgoers or incomers and prevent a block. Where space is valuable, the "double" and the "following" form of stairs may be introduced with advantage. Another method where economy of space demands the angle of ascent to be, say, 45°, in place of the half of that, a form of step is used with treads at two different levels. This was probably first used, as Viollet-le-Duc shows, by mediæval builders in France, and examples may be seen on the upper parts of the church of Saint Nazaire, in Carcassone, and in the transept galleries of the Cathedral of Notre Dame, in Paris.

THEATRES, ETC.

Staircases in theatres and such like buildings should be numerous and fire-proof; in their situation arranged so as to split the audience into sections leading away from the stage. They should contain short, straight flights of moderate width, without winders, single steps, or obstacles of any kind, having strong hardwood hand-rails at both sides, and with half-landings at the bottom of each flight of twelve or fourteen steps. The lower flights should be widened in proportion to the number of persons poured into them at different levels: thus, if a stair for four hundred persons be four feet six inches wide — the Paris Regulations fix four feet eleven inches as a minimum width — they should be increased by six inches for every one hundred persons up to a maximum of nine feet.[1] Wherever they are crowded it is as desirable to avoid too wide stairs (more especially when long, unless a central rail be provided) as it is in spiral stairs or winders. Relief should be sought rather by increasing the exit facilities in the shape of isolated extra stairs than by widening one or two. For schools, three feet six inches to four feet is the maximum width. The rule for such should be broad, wide landings and narrow stairs.[2]

[1] Report of Committee of Austrian Society of Engineers and Architects. Memo. by Prussian Academy of Architecture. Rules of the Metropolitan Board of Works.

[2] E. H. Robson's "*School Architecture.*"

LIGHT.

All staircases, more especially at the commencement and landings, should be thoroughly well lighted by an equally diffused light penetrating every corner. Where this cannot be attained by windows in the outer walls, a lantern light is the best substitute, and the well-hole should be sufficiently large to allow of the rays reaching to the lowest floor. Nothing can excel the power of vertical illumination. We see this illustrated better, perhaps, than anywhere else on looking up through one hundred and fifty feet to the "eye" of the Pantheon, every square foot of which we know satisfactorily lights three thousand cubic feet of space. Windows are, however, much to be preferred, where they can be got, for their cheerfulness, for their chances of a pleasant prospect, if stained glass has been sparingly used, for the sun's rays if the aspect happens to be good (though no one will sacrifice the rooms to secure this), and for the thorough ventilation obtained. "Dark staircases are unhealthy and dangerous."[3]

VENTILATION.

Staircases, more especially in town houses, must be thoroughly well lighted. Smells ascend through this central shaft to every room in the house with uncomfortable rapidity. To provide for their extraction if present, and to prevent their access is the first consideration. It is therefore essential that: (1) No sanitary appliances, unless they are carefully ventilated, be near it. (2) That the service of dinner should not pass through the principal or any bedroom stair.[4] (3) That the cooking-range in the kitchen should have a hood or chamber and extracting flues over for the speedy exit of smells. (4) That the kitchen itself be well ventilated and completely shut off by swing doors. (5) That the stair from the basement should not come up under the main stair, and that the dinner lift be well removed. Each room should have its own supply of air, and be independent of drawing any portion of its supply from the stair reservoir. This reservoir should be as often changed as possible, to prevent the contamination of the air in the upper apartments. Windows in the outer walls are best for this purpose. Where a lantern light is used — and this form is advantageous in protecting the house from darkness after a fall of snow — the sides should be made to open. An up-current may also be provided, and extracting ventilators used. It is very important that these matters should be attended to in the planning of staircases for hospitals, workhouses and structures of a like character. In the large tenements of flatted dwelling-houses erected in Scotland the practice of placing the stair in a central well having all the water-closets ventilated into it should, of course, be carefully avoided. Heat is always desirable for the staircases of private houses, either in the form of a cheery, open fire, or by a coil of pipes.

DECORATION.

On the architectural or decorative treatment of internal staircases we can scarcely touch further than we have already done. We may only mention that for magnificent examples of the application of veneering the walls with colored marbles, decorating the ceilings with exquisite stucco-work, or both with paintings in fresco, we naturally turn for inspiration to that Land of Art, Italy, where an exuberance of wealth makes selection a work of supererogation. For polychromatic treatment of the highest class we would cite the Library at Munich, and for panelled work, ornamental ceilings, or tapestry hangings, the staircases erected in our own country during the reigns of Elizabeth and James I. It is almost unnecessary to add that all colored decoration must be subordinated to the architecture of the staircase, and that it appeals to our good taste by possessing chasteness, simplicity and harmony.

CONCLUSION.

The staircase is an essential component part of nearly every domestic structure. It is the central and principal feature. Presenting many complex problems, and occupying a conspicuous position, it affords full scope and is well worthy the display of ingenuity, of happy disposition, and of that combination of constructional strength and quiet, harmonious, artistic beauty, which here, if anywhere in a dwelling, indicate the ability of the designer. The axiomatic, pithy brevity of Wotton, whose admirable precepts Professor Cockerell says "are amongst the most precious in our language," we cannot do better than conclude with, as embodying in a quaint, condensed form the leading principles at least which all ought to bear in remembrance. "Staircases must have a very liberal light, against all casualty of slips and falls. The space above the head must be large and airy, which the Italians used to call *un bels-fogolo*, as it were good ventilation, because a man doth spend much breath in mounting. That the half paces be well distributed at competent distances for reposing on the way. That to avoid encounters, and, besides, to gratifie the beholder, the whole staircase have no nigard latitude."

A PLATE-GLASS INSURANCE DID NOT COVER THE LOSS.— A jeweller in Frankfort had his plate-glass window insured. In putting up an awning a small screw was put in the edge of the plate of glass; the screw became so expanded that it finally split the plate. The company refused to pay a claim for damages and two courts have given a verdict in its favor, the plaintiff having been guilty of culpable carelessness.— *The Spectator.*

[3] Captain Douglas Galton's "*Healthy Dwellings.*"

[4] Kerr's "*English Gentleman's House.*"

CIRCULAR OF THE TRUSTEES A. I. A., IN THE MATTER OF COMPETITIONS.

American Institute of Architects,
Secretary's Office, 10 Catherine St.,
Newport, R. I., July 2, 1884.

Sir, — At a meeting of the Board of Trustees, A. I. A., held at the Institute Room, Bryant Building, New York, on Wednesday, June 18, 1884, I was instructed to call the attention of all Fellows and Associates to an "open letter to the profession," presented by the editors of the *American Architect and Building News*, in their issue of April 5, 1884. This "open letter" relates to the much-discussed subject of competition, and is hereto appended.

The Trustees request you to consider the points discussed in this letter from the standpoint of your own views and experiences in connection with competitions, both open and limited, and communicate the result of such consideration to the Secretary of the A. I. A.

This request is based upon intimations received from several Chapters of the Institute, that it seems to them advisable that some action in the premises be taken by the National body as represented by its Board of Trustees. Before taking such action the Board is desirous of becoming more fully informed upon individual opinions. You will therefore confer a favor and materially assist the Trustees in their investigation of the subject by sending any information that you may be willing to impart to the office of the Secretary, on or before September 15, 1884.

[*From American Architect and Building News, April* 5, 1884.]

COMPETITIONS: AN OPEN LETTER TO THE PROFESSION.

[The *Builder* for March 15 contains a statement to the effect that the Committee on Competitions of the Royal Institute of British Architects has just issued a circular to the architects of the United Kingdom, inviting them to pledge themselves not to take part in a public competition unless the award is to be made with the aid of a professional adviser. This emboldens us to lay before the profession in this country a somewhat similar but broader proposition, which we drew up some months ago, but until now have hesitated to make it public. We now present it to the profession, and as, in spite of its crudity, it may be the starting-point of a much-desired reform, we beg our readers to give it their earnest consideration, and communicate to us the conclusion they arrive at. We here subjoin our proposition in the form of an open letter.—Eds. American Architect.]

THE PROPOSITION.

Mr. ——, *Architect:* —

Dear Sir, — Will you kindly read and consider the following suggestion for a coalition of the architects in this country in the matter of competitions, and notify us of your willingness to join in any such movement, or your objections to it if you cannot approve of such a coalition.

It is to be understood that this information is sought by the editors for their *private* information, and not *in any way for publication*. It is, rather, the preliminary step to some, at present undetermined, scheme for mutual protection in the matter of competitions.

Very truly yours, The Editors.

To the Editors of the American Architect: —

Dear Sirs, — On the supposition that an alliance of the architects of the United States and Canada, for their mutual protection in the matter of competitions for architectural designs can be effected without giving rise to possible objectionable features of trades-unionism, I hereby inform the editors of the *American Architect* for their *private* information that, in the event of such a coalition being assented to by a majority of members of the profession, I would thereafter absolutely abstain from taking part in any public competition, or any limited competition for a public building, in which the building-committee or other responsible party issuing the invitation to compete did not pledge itself as follows: —

1. To issue a programme prepared with the help of an architect, such architect or his partners to be debarred from competing.

2. To have at least one architect as member of the jury of award, such architect to have the casting vote in event of a tie.

3. To assure to the architect securing the award of the jury the execution of his design (if the building is built) at the regular compensation of five per cent on the entire cost of the work.

4. To make no use whatsoever of rejected designs, but to return all such to their authors without loss of time.

5. To pay to the successful architect, in case it is found necessary to abandon the project, the commission regularly charged for so much of the usual professional work as has actually been performed by him, such charge being the usual percentage computed on the estimated cost of the design which it is now found inadvisable to carry into execution.

(Signed.)

The term "public building," as used in the "open letter," is understood by the Trustees to refer to all national, State, county and municipal edifices, but does not refer to buildings erected through the enterprise or munificence of individuals or associations.

Respectfully submitted for the Board of Trustees,

George C. Mason, Jr.,
Secretary A. I. A.

[We understand that the above circular has been addressed to all the architects of the country, irrespective of their membership in the Institute, and we trust, now that the proposition appears once more under a *cachet*, which seems to promise effective work, that the responses will be more cordial and numerous than before.—Eds. American Architect.]

SHINGLING EYE-BROW DORMERS.

Omaha, Neb., June 26, 1884.

To the Editors of the American Architect: —

Gentlemen, — Will you kindly state how the "eyebrow" dormers are shingled-up with the roof to prevent leakage, and make a good permanent job. Truly yours, G.

[The roof boarding is bent over the "eyebrow dormers," and the shingles or tiles carried over without any break. They are very tight.— Eds. American Architect.]

THE *AMERICAN ARCHITECT* A "DUDES'" ORGAN.

Topeka, Kan., July 17, 1884.

To the Editors of the American Architect: —

Dear Sirs, — Years ago I began to take the *American Architect*, first to see what would come of it, after the many failures in this direction. I continued my subscription because I thought that an honest effort was being made to give us an architectural paper that would be alike to all men; then came a period during which I was unable to assign a reason why I took the paper, except it might be that of habit. This period was followed by one during which it was the sole representative of the semi-idiotic vagaries and the dudeism in architecture, and I prized it as a curiosity; and now at the close of the fifteenth volume I find myself prizing it as the only paper ever published that can put forth page upon page of "midnight scenes in New Jersey," and make people believe that they are pictures.

I trust that you will be able to make them even more complete in your next issue by adding a touch of the realistic in the shape of a New Jersey mosquito. For the sake of the uninitiated, please label them, "This is the shadow of a Music Hall," or it might be mistaken for the man with a wart on his nose. *Vide* — that tower.

Truly yours, L. M. Wood.

[We always appreciate criticism even when it comes disguised in the shape of "Western humor." Whatever may be Mr. Wood's reason for continuing his subscription, our publishers will always send him a receipt for his money.— Eds. American Architect.]

THE TRAP-VENT LAW.

To the Editors of the American Architect: —

Gentlemen, — I am building a house in a city, in which special trap-ventilation is enforced by law. The owner is obliged to economize painfully in order to be able to build the house at all. We have "cut down" in every detail from foundation to roof, and omitted every luxury to bring the building within the required limits. We are considerably troubled by the trap-ventilation law, which puts us to a large expenditure without any gain that we can see.

It is necessary to have a flat sink in the attic connected with a studio; but there is no other fixture in or above this story; yet owing to the trap-vent law, we are obliged to spend a large amount in carrying vent-pipes to a point above the sink, though the traps are perfectly secure against siphonage without such ventilation. Some of the traps are necessarily at ends of the house opposite to the stack having the attic sink; but as their waste-pipes ultimately discharge into it, these traps must by the law have a separate stack of vent-pipes running up to the roof, or else very long and equally expensive lateral run on account of this sink. There is a water-closet in the second story, but it is of a kind which produces but very slight siphonic action on traps below, so slight in fact that an ordinary 4″ round trap would easily retain its seal indefinitely under its influence.

We protest against the law which we are certain does in a very great majority of cases much more harm than good. Few people understand enough about plumbing to know of the unnecessary expense they are put to by this law. The plumbers, though aware of the evil, are not so directly the losers by it as to induce them to make a strong effort towards its cure.

Will you not kindly insert this, and invite an expression of opinion upon the subject from your patrons. If I am wrong in supposing the trap-vent law is a mistake, I am quite anxious to know on what grounds. Yours respectfully, "A."

[We do not see that "A" can do anything else than lament that his client was obliged to build while the present Procrustesian plumbing law was in force, the more that we believe the time is not far off when it will no longer be necessary to hew things to fit exactly the official pint-pot. — Eds. American Architect.]

Women as Architects. — Mr. Charles F. Wingate, former editor of the *Sanitary Engineer*, urges women to become architects because the profession "is not arduous, and is well suited to feminine tastes, habits and strength." On the evidence of this statement we take the liberty of questioning Mr. Wingate's knowledge of what constitutes the work of a practising architect, and also his capacity of gauging the strength of the ordinary woman, for we can hardly suppose he does not comprehend the meaning of the word "arduous." A certain portion of an architect's work is, however, well suited to a woman's capacity, and we wonder that more women do not fit themselves for the practice of some of its branches, but we hope few will be lead astray by such inconsiderate and mischievous advice as Mr. Wingate's.

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

301,850. KNOB-ATTACHMENT. — Joseph Bardsley, Newark, N. J.

301,856. HANGING BELLS. — Gardiner Campbell, Milwaukee, Wis.

301,862. BURGLAR-ALARM. — John B. Chase, Aurora, Ill.

301,868. SUPPLY-APPARATUS FOR WATER-CLOSETS. — Henry Dawson, Worcester, Mass.

301,885. FIREPLACE. — Egbert Dewey Haven, Albany, Oreg.

301,893. ELEVATOR-HATCHWAY OPENING MECHANISM. — Martin W. Hoben, Cohoes, N. Y.

301,899. SHUTTER-WORKER. — William Kaufman and Abraham Kaufman, New York, N. Y.

301,904. CHIMNEY. — Chas. B. Loveless, Worthington, Minn.

301,923. FIRE-ESCAPE. — Joseph Reisdorff, Cottleville, Mo.

301,932. VALVE FOR WATER-CLOSETS. — William Smith, San Francisco, Cal.

301,970. KEY-HOLDER. — Robert Duerr and George F. Rohn, Milwaukee, Wis.

302,003. HYDRAULIC ELEVATOR. — Albert F. Knorp, San Francisco, Cal.

302,022. BASIN-FAUCET. — John M. Peck, New Haven, Conn.

302,030. FIREPLACE STOVE. — James D. Richards, Patriot, Ind.

302,058. HINGE-MORTISE MACHINE. — Joseph D. Thurston, South Union, Me.

302,059. FIRE-ESCAPE. — Joseph H. Townsend and Edward A. Dubey, Brooklyn, N. Y.

302,064. VENTILATION FOR BUILDINGS. — Henry Vollweiler, Brooklyn, N. Y.

302,067. SCREW-DRIVER. — Alfred D. Wallen, Mendham, N. J.

302,078. ELEVATOR. — Jacob Wimenour, Washington, Ind.

302,092. VENTILATOR-CAP. — Joseph M. Bing, Millville, N. J.

302,095. WEATHER-STRIP. — Gustav Burkhardt, Homer, Ill.

302,102. FOLDING SCAFFOLD. — Dennison P. Chesebro and William S. Whitman, New York, N. Y.

302,106. CLAMP. — Alva M. Colt, Batavia, N. Y.

302,110. WASTE-PIPE PROTECTOR. — Hirsch S. Danziger, Chicago, Ill.

302,140. OVERFLOW-TRAP FOR WASH-BASINS, BATH-TUBS, ETC. — William T. Jebb, Buffalo, N. Y.

302,149. BURNING BRICK, TILE, ETC. — John K. MacIver, Detroit, Mich.

302,151. FIRE-ESCAPE. — Christian E. Metzler, Philadelphia, Pa.

302,172. SELF-CLOSING HATCHWAY. — Richard D. Thackston, St. Louis, Mo.

302,180. CRANE. — Samuel T. Wellman, Cleveland, Ohio.

302,183. HANDLE FOR CROSSCUT-SAWS. — John Quincy Adams, Jr., Blanchard, Mich.

302,210. STEAM-BOILER FOR HEATING PURPOSES. — Frank H. Pulsifer, Auburn, N. Y.

SUMMARY OF THE WEEK.

Baltimore.

ADDITIONS AND ALTERATIONS. — Wm. F. Weber, architect, has prepared plans for additions and alterations to store, 58 and 60 Lexington St., to cost $9,400; Geo. Bunnecke, builder.

BUILDING PERMITS. — Since our last report twenty permits have been granted, the more important of which are the following: —

E. Brichard, three-st'y brick building, s s Chew St., s w cor. Chapel St.

Albert Mahone, 8 two-st'y brick buildings (square), w s Vincent Alley, between Townsend and Mosher Sts.

Mary H. Popp, three-st'y and mansard brick building, s e cor. Ensor and Mott Sts.

St. Michael's School, three-st'y brick building, w s Wolfe St., between Baltimore and Lombard Sts.

G. L. Hesenauer, three-st'y brick building, e s Exeter St., between Lombard and Watson Sts.

E. W. Gorman, 12 two-st'y brick buildings, e s Patterson Park Ave., commencing n e cor. Jefferson St.; 6 two-st'y brick buildings, s s Jefferson St., commencing s e cor. Castle St.; and 10 two-st'y brick buildings, e s Castle St., s of Jefferson St.

Louis Grebb, two-st'y brick building, 31′ x 44′, and one-st'y brick building, 33′ x 120′, s s Boston St., opposite Burke St.

J. J. Underhill, two-st'y brick building, 31′ x 44′, and one-st'y brick building, 33′ x 120′, s s Boston St., opposite Burke St.

Boston.

BUILDING PERMITS. — *Wood.* — *Auburn St., No.* 20, Ward 19, for Mrs. Mary E. Cowdrey, dwell., 12′ x 15′ and 24′ x 42′, two-st'y pitch; Henry C. Allen, builder.

Emerson St., near L St., Ward 14, for Wm. T. Eaton, dwell., 7′ x 11′ and 21′ 6″ x 42′, two-st'y pitch; Wm. T. Eaton, builder.

East Fifth St., near L St., Ward 14, for Wm. T. Eaton, dwell., 7′ x 11′ and 21′ 6″ x 42′, two-st'y pitch; Wm. T. Eaton, builder.

High St., near Ericsson St., Ward 24, for John E. Tuttle, dwell., 27′ and 32′ x 37′, two-st'y mansard; Wm. T. Eaton, builder.

Webster St., Nos. 82 *and* 84, Ward 2, for Mr. Galligan, 2 dwells., 22′ x 35′, three-st'y flat; C. & J. Etridge, builders.

Winship St., e s, near Cambridge St., Ward 25, for Catherine Phelan, 2 dwells., 12′ 6″ and 15′ 6″ x 34′, two-st'y pitch; James Keefe, builder.

Waumbeck St., near Winona St., Ward 21, for Nathan S. Wilbur, dwell., 19′ 2″ and 30′ x 46′ 4″, two-st'y pitch; Nathan S. Wilbur, builder.

Sharon St., n s, near Brown Ave., Ward 23, for Henrietta Wilson, dwell., 26′ 6″ x 31′ 6″, two-st'y pitch; W. S. Mitchell, builder.

Nelson St., near Corbel St., Ward 24, for Hezekiel G. Ufford, dwell., 22′ 3′ x 28′, two-st'y pitch; Miletus H. Jackson, builder.

Magnolia St., No. 34, Ward 20, for J. S. Wilson, dwell., 22′ x 50′, two-st'y pitch; C. E. Currier, builder.

Court Sq., off Rand Sq., Ward 20, for John C. Kelley, dwell., 20′ x 42′, three-st'y flat; Chas. A. Jefferson, builder.

Savin St., No. 3, Ward 21, for Lorenzo Vose, dwell., 14′ x 19′ and 21′ x 30′, two-st'y pitch; Lorenzo Vose, builder.

Brooklyn.

BUILDING PERMITS. — *Reid Ave.*, e s, 50′ s Halsey St., two-st'y brick dwell., tin roof; cost, $3,500; owner, Mrs. J. Walter Stoops, Putnam Ave., near Reid Ave.; architects and builders, McKee Bros.

Newell St., e s, 195′ n Norman Ave., 5 three-st'y frame tenements, gravel and tin roofs; cost, each, $4,000; owner and carpenter, R. B. Riker, 102 South Third St.; mason, G. F. Burns.

Palmetto St., n s, 125′ e Central Ave., three-st'y frame dwell., tin roof; cost, $5,000; owner, Miss Kate Austin, 2212 Second Ave., New York; builder, B. Morgan.

Twenty-third St., s s, 125′ w Fourth Ave., three-st'y frame tenement, tin roof; cost, $4,500; owner, L. A. Tooker, 249 East One Hundred and Seventeenth St., New York; builder, John Sorenson.

Greenpoint Ave., No. 165, n s, 275′ e Manhattan Ave., four-st'y brick store and tenement, tin roof; cost, $8,000; owner, Susanna Reiss, 157 Greenpoint Ave.; architect, J. Mullhall; builders, J. Hafford and Post & Walker.

Graham Ave., n e cor. Powers St., two-st'y brick bakery, gravel roof, brick and stone cornice; cost, $20,000; owner, A. B. Herstmann, on premises; architect, Th. Engelhardt.

Powers St., Nos. 175 *and* 177, n s, 100′ e Graham Ave., three-st'y brick stable, gravel roof, brick and stone cornice; cost, $10,000; owner and architect, same as last.

Monroe St., s s, 175′ e Throop Ave., 3 two-st'y brown-stone dwells., tin roof; cost, each, $4,000; owner, etc., W. J. C. Miller, 299 Sumner Ave.

Flushing Ave., s s, 80′ 4″ w Garden St., 3 three-st'y frame tenements, tin roofs; total cost, $11,400; owner, Sigmund Jacobi, 732 Flushing Ave.; architect, Frank Holmberg; builder, Wm. Hellmann.

St. James Pl., w s, 120′ s De Kalb Ave., 3 three-st'y brick dwells., tin roofs; cost, each, $5,000; owner, Jas. Callihan, 321 Washington Ave.; builder, Joseph I. Kirvy.

Graham Ave., Nos. 359 *and* 361, n w cor. Conselyea St., 2 three-st'y frame stores and tenements, tin roofs; cost for both, $9,500; owner, Louisa Haupert, 209 Frost St.; architect, Th. Engelhardt; builder, Jacob Schoch.

Grand St., n e cor. Catherine St., three-st'y frame store and tenement, tin roof; cost, $4,900; owner, James Follmer, cor. Grand St. and Bushwick Ave.; architect, Th. Engelhardt; builders, Young & Lamb.

Central Ave., No. 130, w s, 125′ n Myrtle St., three-st'y frame store and tenement, tin roof; cost, $4,000; owner, Barbara Winkler, 91 Evergreen Ave.; architect, Th. Engelhardt; builders, Frank Blatz and John Rueger.

Chicago.

STORES. — Adler & Sullivan are architects of the six-st'y store-building, 68′ x 171′, to be built on Randolph St., near Wabash Ave., for Martin Ryerson; Lake Superior brown-stone, iron, and plate glass; cost, about $125,000.

Adler & Sullivan have just completed plans for a six-st'y business-building on Market St., between Madison and Monroe Sts., 80 feet square, Lake Superior brown-stone, Anderson pressed-brick, iron and glass; probable cost, $90,000; owner, A. F. Troescher, of New York.

BUILDING PERMITS. — Soper Lumber Co., two-st'y office and dwell., 733 Laflin St.; cost, $4,500.

Belden Ave. Presbyterian Church, church, 195 Belden Ave.; cost, $4,500.

H. D. Warner, three-st'y dwell., Prairie Ave.; cost, $3,000; architects, Burnham & Root.

P. Buehrie, three-st'y store and flats, 274 Division St.; cost, $5,000; architect, N. Gerten.

J. Schipper, two-st'y store and dwell., California Ave.; cost, $4,000.

G. Kreig, two-st'y dwell., 815 Twelfth St.; cost, $2,500.

P. McMahon, three-st'y barn, 46 and 48 Fourth Ave.; cost, $13,000.

C. Zuber, three-st'y store and flats, 755 Halsted St.; cost, $6,000; architect, F. Belin.

M. A. Delaney, two-st'y dwell., 537 Hurlbut St.; cost, $5,000; architect, J. Otter.

P. Schoenhofen, three-st'y store and dwell., Milwaukee Ave., cor. Ashland Ave.; cost, $50,000; architect, H. Kley; builder, F. Hanson.

N. Huribut, two-st'y dwell., 476 and 478 Belden Ave.; cost, $10,000; architect, H. L. Gay; builder, J. Pedgrift.

C. L. Lowe, two-st'y dwell., 720 Chicago Ave.; cost, $2,600.

D. H. Bacon, 2 two-st'y dwells., 3201 and 3203 Rhodes Ave.; cost, $8,500; architect, Branch.

A. Lendgreen, two-st'y flats, Sedgwick St.; cost, $4,000.

C. Thiet, three-st'y dwell., Wells St.; cost, $5,000; architect, A. F. Boos.

J. W. Maynard, 2 three-st'y dwells., 889 and 891 Adams St.; cost, $12,000; architects, J. M. Van Osdel & Co.

F. Paus, two-st'y dwell., 3039 Bonfield St.; cost, $2,500.

Brown Bros. M'f'g Co., three-st'y factory, 69 and 71 West Jackson St.; cost, $24,000; architect, C. M. Palmer.

H. Sheeler, two-st'y dwell., 237 Third Ave.; cost, $4,000.

A. Hanson, three-st'y flats, 558 Wells St.; cost, $6,500; architect, P. W. Anderson; builder, G. Brown.

R. Degrazzio, addition, 206 Sangamon St.; cost, $3,100.

M. A. Waters, two-st'y flats, 2943 South Park Ave.; cost, $5,000; architect, M. L. Beers.

J. Hlavacek, three-st'y store and dwell., 446 Twelfth St.; cost, $6,000.

P. Stanek, two-st'y dwell., 667 Centre Ave.; cost, $3,500.

Kokes & Smreka, 2 two-st'y stores and dwells., 811 and 813 Ashland Ave.; cost, $11,000.

D. Cameron, two-st'y dwell., 902 Monroe St.; cost, $5,000.

M. Gross, two-st'y flats, 342 Rush St.; cost, $5,000.

C. Hulvan, three-st'y flats, 681 Madison St.; cost, $10,000.

C. Obery, three-st'y flats, 200 May St.; cost, $4,500; architect, L. Berge.

J. H. Ramsfeld, three-st'y flat, 125 Townsend St.; cost, $5,400; architect, J. Otter.

J. Johnson, 6 cottages, Hirsch St., cor. Leavitt and Shober Sts.; cost, $7,000.

Gottfried Brewing Co., five-st'y brewery, 2231-2235 Stewart Ave.; cost, $100,000.

A. F. Troescher, six-st'y warehouse, 117-123 Market St.; cost, $70,000.

E. B. Case, two-st'y dwell., 546 Jackson St.; cost, $6,500.

F. Hoenmichel, 2 three-st'y stores and dwells., 636 and 638 Blue Island Ave.; cost, $14,500; architect, P. V. Ruehl.

J. Bartel, two-st'y dwell., 173 and 175 Rumsey St.; cost, $3,000.

M. Kussmann, two-st'y dwell., 995 Blue Island Ave.; cost, $3,000.

H. Byrne, 2 three-st'y dwells., 2628 and 2630 Wabash Ave.; cost, $18,000; architect, C. Chapman.

J. L. Stagg, 3 two-st'y dwells., 152-158 Leavitt St.; cost, $10,000; builder, J. C. Anderson.

C. Ummach, two-st'y dwell., 278 North May St.; cost, $6,000; architects, Fromann & Jebson.

A. Syvesson, three-st'y dwell., 340 West Erie St.; cost, $5,000.

M. & J. Dillon, two-st'y dwell., 3133 Wentworth Ave.; cost, $3,500.

Chicago City Railway Co., addition to barn, 2900-2916 Pitney St.; cost, $6,500; builder, A. B. Cook.

H. Teil, three-st'y store and flats, Archer Ave.; cost, $16,000; architect, J. F. Debr.

City of Chicago, three-st'y engine-house; cost, $11,000.

C. Lange, two-st'y dwell., 158 West Division St.; cost, $4,500.

M. Ryerson, six-st'y warehouse, 45 to 49 Randolph St.; cost, $50,000; architects, Adler & Sullivan; builders, Barney & Rodatz.

Cincinnati.

STORE. — H. W. Derby, Esq., is to build a new store and office building, south-east corner of Fourth and Elm Sts.; the lot is 79′ on Fourth St. by 140′ on Elm; the building will be seven stories high, will cost about $100,000, and is in charge of Samuel Hannaford, architect.

BUILDING PERMITS. — A. Kessel, one-st'y brick dwell., 431 Vine St.; cost, $3,500.

Mike Joker, one-and-one-half brick dwell., Mickens Ave.; cost, $10,000.

Lev. Baumgaiten, three-and-one-half-st'y brick dwell., 107 East Second St.; cost, $3,000.

J. B. Washburn, three-st'y brick dwell., cor. Blue Rock and Terrel Sts.; cost, $9,000.

J. H. Thowar, three-st'y brick dwell., 472 George St.; cost, $5,000.

A. B. Ritterman, two-and-one-half-st'y brick dwell., cor. Ohio Ave. and Calhoun St.; cost, $6,000.

J. H. Hulvershorn, two-and-one-half-st'y brick dwell., 141 Loth St.; cost, $4,000.

H. Wrigman, three-st'y brick dwell., Dandridge St.; cost, $5,500.

John Dorscher, three-st'y brick dwell., cor. Twelfth and Jackson Sts.; cost, $2,500.

T. F. Moore, two-st'y frame dwell., Gilbert Ave.; cost, $3,500.

H. W. Derby, seven-st'y brick dwell., cor. Fourth and Elm Sts.; cost, $40,000.

Baptist Church Congregation, cor. Kemper Lane and McMillian St.; cost, $15,000.

Mrs. Stauder, three-st'y brick dwell. cor. Liberty and Elm Sts.; cost, $4,000.

A. H. Hosenmeyer, three-and-one-half story brick dwell., Mulberry St.; cost, $5,400.

Anchor White Lead Co., two-st'y brick building, Culvert St., bet. Fourth and Fifth Sts.; cost, $3,500.

Paul Brungman, two-st'y frame dwell., cor. Spring and Locust Sts.; cost, $3,000.

Morris White, four-st'y brick dwell., cor. Court and Vine Sts.; cost, $18,000.

E. B. Guinn, two-and-one-half-st'y brick dwell., cor. Corry and Jefferson Sts.; cost, $3,000.

James Louer, two-st'y brick dwell., cor. Cutter and Lime Sts.; cost, $5,000.

Louis Glenn, two-st'y frame dwell., 480 Easter Ave.; cost, $2,000.

Jas. Oker, four st'y brick dwell., 735 Central Ave.; cost, $8,000.

John Goror, four-st'y brick dwell., 365 State Ave.; cost, $2,500.

Thos. Burke, two-st'y brick dwell., cor. Lane and Locust Sts.; cost, $3,200.

John Kilgour, three-st'y brick dwell., cor. Hatch St. and Observatory Road; cost, $6,000.

L. Haggerson, two-and-one-half-st'y frame dwell., Camp Washington; cost, $2,800.

Total amount to date, $190,000.

Total number of permits to date, 506.

Repairs, $11,500.

New York.

STORES. — For Dr. Aaron Wright a three-st'y and basement store, 20′ x 50′, stone and iron front, is to be built at No. 9 Bleecker St., from designs of Mr. Frederick C. Withers.

For Mr. S. Morris a six-st'y and basement warehouse, 18′ 9″ x 100′, is to be erected at No. 127 Broadway, with brick, stone and iron front, from designs of Mr. Alfred Tucker.

STRIKE. — The building business, which has been very quiet, is likely to be still more retarded by the bricklayers' and laborers' strike which was started on Monday.

BUILDING PERMITS. — *First Ave.*, s w cor. Seventy-first St., 5 four-st'y brick stores and tenements, tin roofs; cost, each, $15,000; owner, Jacob Wick, Jr., 508 East Eighty-seventh St.; architect, J. Brandt.

West Eighteenth St., No. 429, five-st'y brown-stone tenement, tin roof; cost, $16,500; owner, Elizabeth Seitz, 18 Beekman Pl.; builder, J. Brandt.

Eighty-seventh St., n s, 275′ w Ninth Ave., 7 three-st'y brick and brown-stone dwells., tin and slate roofs; cost, each, from $10,000 to $12,000; owner, C. L. Guilleaume, 56 East Seventy-sixth St.

East Seventy-seventh St., No. 247, five-st'y brick and brown-stone tenement, tin roof; cost, $18,000; owner, John McCahey, on premises; architects, A. B. Ogden & Son.

West Eighteenth St., No. 8, four-st'y brick and brown-stone dwell., mansard tin roof; cost, $30,000, owner, Mrs. Margaret K. Parker, 4 East Twelfth St.; architect, E. D. Lindsey; builder, J. J. Tucker.

West St., foot Hubert St., on bulkhead and pier, one and two st'y corrugated-iron freight-shed, tin roof; cost, $40,000: owner and architect, Pennsylvania R. R. Co., by E. F. Brooks, Engineer, Jersey City.

West Twenty-seventh St., No. 9, four-st'y brick store warehouse, tin roof; cost, $55,000; owner, W. Y. Mortimer, 31 West Thirty-fourth St.; architects, Babcock & McAvoy; builder, Lewis Adams.

Bowery, Nos. 39-43, 3 five-st'y brick stores, tin roofs; cost, each, about $12,000; owners, Gertrude W. Dodd and Annie C. Ward, Dr. B. L. Ward, att'y, West Orange, N. J.; architect, J. P. Leo; builders, P. Tostevin's Sons.

East Eighty-fourth St., No. 126, five-st'y brown-stone tenement, tin roof; cost, $15,000; owner, John Spiess, Jr., 164 East Eighty-sixth St.; architect, J. Brandt.

West Eighty-fourth St., Nos. 366-370, 3 four-st'y Connecticut brown-stone dwells., tin roofs; cost, each, $15,000; owner, Terence Kiernan, 317 East Eighty-third St.; architect, F. F. Ward.

One Hundred and Fifth St., s s, 275′ e Grand Boulevard, 5 three-st'y brown-stone dwells., tin roofs; cost, each, $10,000; owner, architect and builder, John F. Moore, 427 West Fiftieth St.

Attorney St., No. 127, four-st'y brick cigar-box factory, gravel roof; cost, $4,500; owner, Mrs. Catharine Livingston, 64 West Thirty-ninth St.; architects, D. & J. Jardine.

Twelfth Ave., s w cor. One Hundred and Thirty-first St., one-st'y brick store, tin roof; cost, about $5,000; lessee, Henry N. Vedder, One Hundred and Thirty-eighth St. and Hudson River; architect, A. Spence.

Eightieth St., s s, 95′ w Madison Ave., 3 four-st'y brick and brown-stone dwells., mansard tin roofs: cost, each, $33,000; owner, Anthony Mowbray, 104 East Eighty-fifth St.: architects, J. B. McElfatrick, Sons & De Baud; builder, Wm. Mercer.

Second Ave., n w cor. One Hundred and Fourth St., 4 five-st'y brick tenements, tin roofs; cost, each, $18,000; owner, David Stevenson; architects, Thom & Wilson.

Courtland Ave., s w cor. One Hundred and Fifty-second St., three-st'y brick tenement, tin roof; cost, $10,400; owner, Laura A. Peter, 341 Eighteenth St., Brooklyn; architect, A. Pfeiffer.

One Hundred and Thirty-first St., s s, 90′ w Sixth Ave., 4 three-st'y brown-stone front dwells., tin roofs; cost, each, $10,000; owner, Samuel P. Wright, 150 West One Hundred and Thirtieth St.; architect, W. S. Jennings.

One Hundred and Thirty-first St., s s, 157′ 6″ w Sixth Ave., 4 three-st'y brown-stone front dwells., tin roofs; cost, each, $10,000; owner, Stephen J. Wright, 201 West One Hundred and Thirtieth St.; architect, W. S. Jennings.

Rivington St., No. 189, five-st'y brick tenement, tin roof; cost, $18,000; owner, Adolph Pawel, 335 East Seventy-ninth St.; architect, Wm. Graul.

Madison Ave., No. 600, six-st'y brown-stone dwell., tile and tin roof; cost, $50,000; owner, Dr. Theodore G. Thomas, 294 Fifth Ave.; architect, Bruce Price.

Concord Ave., e s, 273′ s One Hundred and Sixty-fourth St., 2 three-st'y frame dwells., tin roofs; cost, $2,800 and $3,700; owner, Joseph Schaub, Gerard Ave., cor. One Hundred and Fifty-sixth St.; architect, Wm. Kusche.

Second Ave., e s, 100′ 11″ n One Hundred and Eighteenth St., five st'y brick tenement, tin roof; cost, $25,000; owner and builder, James Wood, 341 East One Hundred and Sixteenth St.; architect, M. V. B. Ferdon.

ALTERATIONS. — *Sixteenth St.*, n s, 160′ e Eighth Ave., two-st'y brick extension, tin roof, iron columns in basement; cost, about $11,000; owner, Sixteenth Baptist Church, C. J. Day, President, etc., 23 West Twelfth St.; architect, J. Rogers.

Essex St., n w cor. Essex Market Pl., internal alterations, enlarging court-room, etc.; cost, $10,000; owner, City of New York, H. O. Thompson, Commissioner Public Works; architect, Douglas Smith.

William St., No. 158, raise two stories and a six-st'y extension, tin roof; cost, $10,000; agent for owner, E. R. Robinson, 159 Broadway; architect, Geo. B. Post; builder, not selected.

Eighth Ave., No. 131, raise one-st'y and a five-st'y brick extension, tin roof; cost, $6,000; owner, Matilda Alexander, 309 West Fifty-first St.; architect, M. C. Merritt.

St. Louis.

BUILDING PERMITS. — Sixty-four permits have been issued since our last report. Those worth $2,500 and over are as follows:—

Hampeter & Eckhoff, three-st'y furniture factory; cost, $7,000; Aug. Beinke, architect and contractor.

Dennis Connelly, 2 adjacent brick dwells.; cost, $4,000; O'Malley Bros., contractors.

Mr. Eberle, 2 adjoining two-st'y brick dwells; cost, $4,500; J. Seidhoff, contractor.

Church of the Unity, one-st'y brick chapel; cost, $4,000; Mortimer, architect; Bonsak, contractor.

Adeline M. Loehr, two-st'y brick dwell.; cost, $2,700; S. V. Mayors, contractor.

Jno. Mertz, 2 adjoining two-st'y brick dwells.; cost, $5,500; Herman & Schumacher, contractors.

J. Hermann, two-st'y brick dwell.; cost, $4,500; J. Hermann, contractor.

A Bollinger, two-st'y brick dwell.; cost, $3,000; A. Bollinger, contractor.

Geo. Kohmann, three-st'y mansard boarding-house; cost, $5,800; Johnsen, architect; V. Beckerle, contractor.

M. Berker, two-st'y brick dwell.; cost, $3,000; H. E. Peipers, architect; J. Keefe, contractor.

Wilson & McNary, 2 adjacent brick dwells.; cost, $6,700; J. V. Mayors, contractor.

Ella C. A. K. & Mary Lackland, 3 adjacent two-st'y tenements; cost, $4,000; S. Robbins, architect; J. C. Brockmier, contractor.

C. S. Grandjean, one-st'y mansard dwell.; cost, $3,000; C. Jupier, architect; Louis Yaeger, contractor.

Arnold Steinhugen, 2 adjacent one-st'y dwells.; cost, $3,000; C. F. May, architect; Louis Yaeger, contractor.

St. Louis Stamping Co., storage-house; cost, $2,500; A. Beinke, architect and contractor.

C. E. Cappelle, two-st'y stores and dwell.; cost, $4,900; G. I. Burnett & Son, architects; sublet.

H. Hemplemann, 2 adjacent dwells.; cost, $7,500; B. J. Goesse, architect; H. Heitmann, contractor.

C. Bergman, two-st'y dwell.; cost, $3,600; O. Koenig, architect; A. Fenner, contractor.

Jno. Droyer, two-st'y brick dwell.; cost, $4,000; Gaines, architect; Jno. Droyer, contractor.

G. M. Verno, 2 adjacent two-st'y dwells.; cost, $4,600; G. M. Verno, contractor.

Henry Staatz, two-st'y dwell.; cost, $3,600; Jos. Schuster, contractor.

Toledo.

ASYLUM CONTRACTS. — The long-talked-of asylum contract was finally awarded to M. J. Malone & Co. for a trifle less than $400,000. The price falling far below the appropriation, an addition of cellars and basements to the various buildings has been made at a cost of about $46,000. This, however, includes some changes in the heating, drainage, etc. Ground is being broken, and the time given for completing the work is about two and one-half years.

Mr. James Winans, a most competent civil engineer and superintendent, has been retained to take general charge of the entire work, and will give it his valuable service most of the time. Messrs. Malone & Co. rank as one of the oldest and most successful firms in this part of the country.

OFFICE BUILDING. — One-st'y brick office building, corner Superior and Madison Sts.; cost about $3,000; Miles & Horn, owners, architects and builders.

HOUSES. — Brick dwell., two-st'y and cellar, Nineteenth St., for S. Spear; cost about $6,000; S. Spear, builder.

Block of 5 brick dwells., two-st'y and cellar, 105′ front, cor. Eleventh and Lafayette Sts.; Rayneer & Seagrave, owners; J. V. Sanfleet, builder; cost, about $14,000.

Block of two-st'y brick and frame tenements, Superior St., for Mr. Hubbard; cost, about $7,000; Gibbs & Co., architects.

Two-st'y frame house for J. D. Ford, Esq., cor. Tweifth and Madison Sts.; cost, about $5,000; N. B. Bacon, architect; J. Hales, builder.

Two-st'y brick dwell., Madison St., for Mr. Mack; cost, about $6,000; A. Liebold, architect; Carl Schmul, builder.

Two-st'y brick dwell., cor. Twenty-third and Madison Sts., for S. C. Schenck; cost, about $16,000; N. B. Bacon, architect; A. Bently, builder.

Two-st'y frame house, Eleventh St., for John Winfield; cost, about $2,700; N. B. Bacon, architect; R. Hattersley, builder.

Two-st'y and basement brick dwell., Twelfth St., for Mr. Weber; cost, about $5,000; L. Welker, architect; R. Hattersley, builder.

Two-st'y frame dwell., Huron St., for R. Geysel; cost, about $2,500; N. B. Bacon, architect; A. Lombard, builder.

Two-st'y brick double dwell., Madison St., for Mr. P. H. Berdau; cost, about $11,000; N. B. Bacon, architect; J. B. Hassett, builder.

Two two-st'y brick dwells., Twenty-third St., for Jno. R. & Fred Boice; cost, about $8,000; N. B. Bacon, architect; John Valentine, builder.

General Notes.

ALBANY, N. Y. — Chapel at Albany Cemetery, stone; cost, $10,000; R. W. Gibson, architect; S. W. Eaton, contractor.

State Normal School on Willett St., stone and brick; cost, $145,000; Ogden & Wright, architects and contractors; Jas. Shattock, mason; Frederick McCann, carpenter; Sullivan & Ely, iron-work; Wasson & Martain, roofers; Lawrence & Stuart, painters and glaziers.

Henry Russel, Englewood Pl., additions and improvements; cost, $30,000; Ogden & Wright, architects; Pottierj& Stymus, decorators; Jno. N. Parker, carpenter; Carr & Burdick, masons.

It is announced that the force of six hundred laborers on the new Capitol have been discharged, because of the exhaustion of the legislative appropriation.

BUFFALO, N. Y. — The Executive Committee of the Young Men's Association of this city, which some time ago offered prizes for the best plans for a new fire-proof building for their library, have awarded the first prize, $500, to C. L. W. Eidlitz, of New York; the second, $300, to H. H. Richardson, of Brookline, Mass., and the third, $200, to H. H. Wilcox, of Minneapolis, Minn. Mr. Eidlitz's plan is for a building of stone and brick, to cost $223,000, with a library-room with capacity for 283,000 volumes. It is expected that the foundation for the new building will be laid this coming fall. The site is the old Court-House property.

CAMBRIDGE, MASS. — A house for Mr. E. J. Mitten is being constructed on Lee Street, Cambridge, which will cost about $6,000; Mr. Daniel Appleton, of Boston, is the architect.

CUTHBERT, GA. — Mr. J. J. Flood, of Atlanta, is building the court-house. It will necessitate an outlay of $25,000.

LANCASTER, PA. — The board of directors of the Lancaster Cremation and Funeral Reform Association have awarded the contract for the building of their cremation furnace. It is to be of brick, 32′ x 48′, and will be located in the centre of a tract of three acres of land, in the southern part of the city.

MAMARONECK, N. Y. — The Mamaroneck people are to have a new Episcopal church, built of brown-stone, on the site of the present edifice.

MT. CLEMENS, MICH. — But little building is being done here this season.

Mr. E. J. Olde is building a $5,000 brick house.

A block of four stores is being built on Walnut Street, one owned by Mr. Wm. Boilensen, the other three by Bruno Van Landeghem & Son.

Mr. Geo. Murdock is building a brick cottage, from plans prepared by N. J. Gibbs, architect.

OWOSSO, MICH. — The committee for the building of a city-hall and engine-house have accepted plans prepared by N. J. Gibbs, architect, Mt. Clemens, Mich.; cost, $8,000.

PT. HURON, MICH. — The three-st'y brick block cor. Military and Water Sts. is being remodelled from plans by N. J. Gibbs, architect, Mt. Clemens, Mich.

REVERE, MASS. — Messrs. Rand & Taylor, architects, of Boston, have finished the plans for the alterations and additions to the church. The additions when completed will cost about $7,000.

SAG HARBOR, L. I. — The corner-stone of the new Christ Episcopal Church was laid on the 23d inst.

SLEEPY-EYE, MINN. — Griffith & Smith, proprietors of the Merchants' Bank, will build, on the cor. of Main and Fifth Sts., a two-st'y brick banking-house.

Fritz Koehne will build a business-building on Main Street the coming spring; as will J. P. Bertrand.

The Baptist Society will build a large church on Sixth St. this fall.

ST. PAUL, MINN. — George E. Schnell, two-st'y frame dwell., on the s s of Dayton Ave., between Kent and Mackubin Sts.; cost, $2,700.

Theodore Schurmeier, two-st'y frame dwell., on the n s of Tenth St., between Canada and Broadway Sts.; cost, $5,500.

Mrs. M. A. Hastie, two-st'y frame dwell., on the n s of Selby Ave., between Arundel and Mackubin Sts.; cost, $2,450.

O. E. Holman, two-st'y frame dwell., on the n s of Dayton Ave., between Kent and Dale Sts.; cost, $3,600.

Wm. Schornstein, two-st'y brick store-building and dwell.; also frame store-building on the n s of Hudson Ave., between Bates and Maria Aves.; cost, $5,000.

George Rochat, two-st'y brick and double store and dwell., on the w s of Seventh St., between Walnut and Sherman Sts.; cost, $12,000.

W. J. Gronewald, 4 one-st'y frame dwells., on the e s of Webster St., between James and Randolph Sts.; cost, $3,060.

Henry Justus, two-st'y frame double dwell., on the e s of Oak St., between Fifth and Sixth Sts.; cost, $3,640.

E. M. Hallowell, three st'y brick carriage-manufactory, on the w s of Minnesota St., between Ninth and Tenth Sts.; cost, $14,000.

TRENTON, N. J. — The corner-stone of the Masonic Temple was laid July 15.

PROPOSALS.

RESERVOIR. **[At Danville, Ill.]**

Sealed proposals for building a reservoir for the Danville Water Company, addressed to the undersigned, will be received at the office of the Company, in Danville, Ill., **until 5 o'clock,** P. M., **on Friday, August 1, 1884.**

Plans and specifications for the work can be seen at the office of said Company, or at the office of A. J. Guilford, Room 32, No. 171 Lasalle St., Chicago, Ill.

SAMUEL A. MILLER,
448 President The Danville Water Co.

SCHOOL-HOUSE. **[At Cheviot, O.]**

Sealed proposals will be received at the office of Edward C. Reemelin, No. 49 West Third St., Cincinnati, O., **until 12 o'clock,** M., **of the 4th day of August, 1884,** for the erection and entire completion of a one-st'y addition to the school-house of Special School District, No 1, at Cheviot, O., according to the plans and specifications on file at said office. All bids to conform to the requirements of Section 3988 of the Revised Statues of Ohio. The Board reserves the right to reject any or all bids.

448 EDWARD C. REEMELIN, Clerk.

IRON BRIDGE. **[At Salem, N. J.]**

Sealed proposals will be received by the Board of Chosen Freeholders of the County of Salem, **until the 13th day of August next, at noon,** for the building of an iron bridge over Salem Creek, at the city of Salem, in the County of Salem, State of New Jersey.

Specifications can be had by addressing the undersigned, and plans seen by calling on I. O. Acton, Geo. R. Morrison, or John P. Flynn, at Salem, N. J.

The Board reserves the right to accept or reject any or all bids. Address, JOHN P. FLYNN,
Clerk of the Board of Chosen Freeholders
449 of Salem County, N. J.

Publishers' Department.

The American Architect and Building News.

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New Advertisements.

W. & J. SLOANE (New York), Carpetings. Page i.
YALE & TOWNE M'F'G CO. (Stamford, Conn.), Pulley-Blocks. Page xx.
W. C. YOUNG (Philadelphia, Pa.), Stained Glass. Page xii.

PROPOSALS.

SEWERS. [At Providence, R. I.]

BOARD OF PUBLIC WORKS OFFICE, CITY-HALL, PROVIDENCE, R. I., July 18, 1884.

Sealed proposals will be received at this office **until Tuesday, the 29th day of July, 1884, at 11 o'clock,** A. M., for constructing sewers in the following streets: —

In Nichols St., from Walling St. to Nash Lane, about 870 feet of 12-inch pipe-sewer.

In Stimson Ave., from Hope St. to Angell St., about 1,160 feet of 12-inch pipe-sewer.

The bricks, pipe, cement, iron, flag-stones and granite will be furnished by the Board.

The plans and specifications may be seen at the office of the City Engineer.

A bond satisfactory to the Board for a sum equal to about ten per cent of the estimated amount of the contract, as liquidated damages for failure to execute the contract within ten days, if awarded, must accompany each proposal.

A bond satisfactory to the Board for a sum equal to about one-third of the estimated amount of the contract, conditioned upon the faithful performance of the contract, will be required of the successful bidder.

Each sewer, with its necessary man-holes, catch-basins, pipe-branches, connections, etc., must be bid for separately, and the Board reserve the right to reject any or all bids.

CHAS. E. CARPENTER, } Board of
448 CLINTON D. SELLEW } Public Works.

IRON BEAMS. [At New York, N. Y.]

Proposals for cast-iron beams and columns, etc., for laundry, kitchen, boiler-house and work-shop in Retreat Building, Blackwell's Island, embracing the following: —

3 cast-iron columns, 9′ 6″ high, 10″ diameter, and 1″ thick.
3 cast-iron plates, 24″ square, 1½″ thick.
6 12½″ heavy iron beams, 18′ long, bolted together every three feet with cast-iron separators.
4 12½″ heavy iron beams, 15′ 6″ long each.
21 10½″ " " 21′ 10″ "
1 10½″ " " 20′ 10″ "
1 10½″ " " 19′ 10″ "
1 10½″ " " 18′ 10″ "
2 10½″ " " 17′ 10″ "
1 10½″ " " 16′ 10″ "
1 10½″ " " 15′ 10″ "
1 10½″ " " 22′ 10″ "
1 10½″ " " 23′ 1 ″ "
1 10½″ " " 31′ 10″ "
1 10½″ " " 25′ 10″ "
1 10½″ " " 26′ 10″ "
1 10½″ " " 27′ 10″ "
30 tie-rods, 4′ 6″ long x 1″ thick.
8 " 5′ 10″ long x 1″ thick.
19 straps, 1′ 10″ long, with bolts, nuts, etc., to strap beams together, where they join, over girders.
34 strap anchors for anchoring beams to walls.
4 strap-anchors for anchoring girders to walls.

And such other iron as may be needed, in accordance with the specifications and plans prepared by the architect for this purpose, will be received at the office of the Department of Public Charities and Correction, in the city of New York, **until 9.30 o'clock,** A. M., **of Wednesday, July 30, 1884.**

The person or persons making any bid or estimate shall furnish the same in a sealed envelope, endorsed, "Bid or Estimate for Cast-Iron Beams and Columns," with his or their name or names, and the date of presentation, to the head of said Department, at the said office, on or before the day and hour above-named, at which time and place the bids or estimates received will be publicly opened by the President of said Department and read.

The Board of Public Charities and Correction reserves the right to reject all bids or estimates if deemed to be for the public interest, as provided in Section 410, Laws of 1882. 448

WANTED.

Back Numbers of the American Architect.

We shall be under obligations to any one who can furnish us with the following copies of the *American Architect:* —

No. 215, February 7, 1880.

For this number we will pay 50 cents per copy.

PROPOSALS

IRON BRIDGE. [At Baltimore, Md.]

CITY COMMISSIONERS' OFFICE, BALTIMORE, MD., July 1, 1884.

Sealed proposals will be received at this office **until Saturday, August 2, 1884, at 12** M., for the manufacture and erection of one iron span across Jones' Falls on the line of Biddle Street, as per drawings and specifications, to be seen at the office of C. H. Latrobe, Engineer, No. 25 German Street. Proposals to be endorsed "Biddle Street Bridge."

The bids will be opened on the **same day,** in the Mayor's Office, and the right is reserved to reject any and all bids offered. JOHN E. TOOLE,
448 Clerk to City Commissioner.

BRONZE RAILING. [At Washington, D. C.]

DEPARTMENT OF THE INTERIOR, WASHINGTON, D. C., July 17, 1884.

Sealed proposals will be received at this office **until 12** M., **of the 28th day of July, 1884,** for furnishing, delivering, fitting, and erecting in place, complete, a bronze railing, in the reconstruction of the south wing of the Interior Department Building, in accordance with drawings and specifications, which may be seen at the architect's office in said building.

The right to reject any or all bids, or to waive defects, if it be deemed in the interest of the Government to do so, is reserved.

Blank forms of proposals and any additional information may be obtained on application to Cluss & Schulze, architects. H. M. TELLER,
448 Secretary of the Interior.

FURNITURE. [For Cities East of Rocky Mountains.]

OFFICE OF THE SECRETARY, TREASURY DEPARTMENT, WASHINGTON, D. C., July 15, 1884.

Sealed proposals will be received at this office **until 2 o'clock,** P. M., **of Friday, August, 1, 1884,** for manufacturing, delivering, and placing in position in complete working order, certain furniture for United States buildings under control of this department in various cities east of the Rocky Mountains.

Upon application to this office detailed information will be furnished to furniture manufacturers desiring to submit bids.

The department reserves the right to reject any or all bids, or parts of any bid, and to waive defects.
448 CHAS. J. FOLGER, Secretary.

LABOR AND MATERIALS. [At Poughkeepsie, N. Y.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., July 9, 1884.

Sealed proposals will be received at this office **until 2** P. M., **on the 6th day of August, 1884,** for furnishing all the labor and materials, stone, brick, terra-cotta, iron columns and girders, wood-joists, roof-framing, slate-covering, etc., required for the post-office, etc., building at Poughkeepsie, N.Y., in accordance with drawings and specification, copies of which and any additional information may be obtained on application at this office, or the office of the local superintendent of the building.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered. M. E. BELL,
448 Supervising Architect.

WHARFINGS. [At Three Rivers, Conn.]

HARBOR COMMISSIONERS' OFFICE, July 14, 1884.

Sealed tenders, addressed to the undersigned, and endorsed, "Tenders for Three Rivers Harbor Works," will be received **until Saturday, the 9th day of August, 1884,** for the construction of Deep Water Wharfing in the Harbor of Three Rivers, according to a plan and specification to be seen on application at the Harbor Commissioners' Office, Three Rivers, on and after Saturday, the 19th day of July, 1884, where printed forms of tender and other information can be obtained.

The works to be constructed are payable in Three Rivers Harbor Debentures.

Persons tendering are hereby notified that tenders will not be considered unless made on the printed forms supplied and signed with their actual signatures.

Each tender must be accompanied by an accepted bank check for the sum of $1,0 0, payable to the Chairman of the Harbor Commission, which will be forfeited if the party tendering declines to enter into the contract for the work.

For the due fulfilment of the contract security will be required by the deposit of money to the amount of five per cent on the bulk sum of the contract, of which the sum sent in with the tender will be considered a part. All checks will be returned to persons whose tenders are not accepted.

The Commissioners do not, however, bind themselves to accept the lowest or any tender.

By order, GEORGE BALCER,
440 Secretary Harbor Com. Three Rivers.

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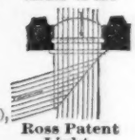

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PROPOSALS.

TO BUILDERS.

Headquarters of N. Y. S. Soldiers' and Sailors' Home, Bath, Steuben Co., N. Y.

July 18th, 1884.

Proposals for erecting a new Barrack, and other buildings, at Soldiers' and Sailors' Home, Bath, Steuben Co., N. Y.

Sealed proposals will be received at the office of the Superintendent of the Soldiers' and Sailors' Home, Bath, Steuben Co., N. Y., until 12 o'clock M. Wednesday, Sixth day of August, 1884, for furnishing labor and material for the above buildings, in accordance with Plans and Specifications for same to be seen and estimated upon at the Headquarters of the said Home. Proposals to be accompanied by satisfactory bonds, proving genuineness of bids.

Proposals to be addressed to
Gen'l. W. F. ROGERS, Chairman Committee on Building and Grounds.
449 *Bath, Steuben Co., N. Y.*

STEAM-HEATING AND PLUMBING. [At Adrian, Mich.]

Sealed proposals for furnishing steam-heating apparatus, plumbing, and gas-fitting, for court-house of Lewanee County, Michigan, in accordance with plans and specifications on file with the county clerk of said county, and with E. O. Fallis & Co., architects, Toledo, O., will be receiving **until Tuesday, August 5th, 1884, at 12 o'clock, noon,** at the county clerk's office, in the city of Adrian, Mich. Each bidder will be required to file with his bid a good and sufficient bond, guaranteeing if awarded the contract to enter into a bond to be approved by the Building Committee to complete the work according to plans and specifications.

Right reserved to reject any and all bids. Address all communications to T. M. Hunter, Adrian, Mich.

IRA SWANEY, ALBERT JAMES, HORACE HOLDRIDGE, WM. M. CORBET, T. M. HUNTER, } Building Committee.

448

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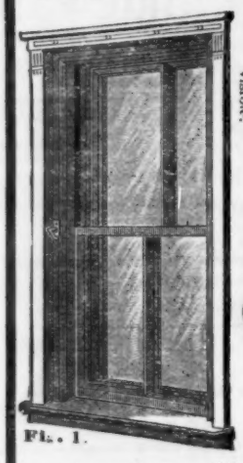

Fig. 1.—Interior view of a window, with ATTWELL LOCK applied, the key-head and escutcheon being alone visible.

Fig. 1.

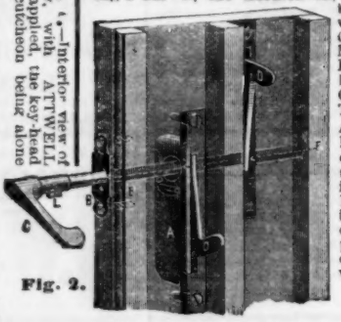

Fig. 2.

Fig. 2.—Sectional view of frame at left of meeting-rails of sash, showing Locks A A mortised into frame on right and left of parting-bead. B, the Escutcheon, located over keyhole in reveal of frame. C, the REMOVABLE Key, controlling from the ONE POINT THE TWO LOCKS A A. D D, the Bolts of Locks, one controlling each sash, operated separately, but working in combination. L, a lug on key, used in operating "shut off"—*i. e.*, holding, at pleasure, either bolt out of engagement with "strike."

Fig. 3.

Fig. 3.—Section of sash showing location and application of "strike." This "strike" gives four locking or ventilating points to each sash within a radius of safety from the admission of the thief's body.

☞ The Keys, Bolts and Strikes are all made of best Malleable Iron.

As may be seen, these Locks are so located and constructed that *the thief cannot control or force them*, and are especially *convenient to the user*. You can *ventilate*, and, by *removing key*, lock with *safety* at same time. The sashes are *automatically locked*, dispensing with all *care and labor* of closing, and avoiding the possibility of an *omission to lock*. An **ideal sash lock** *to every window, and, where weights are not used*, lends all needed power for *holding and controlling either sash, or both, for purposes of ventilation!* They are *simple in construction, easily applied, adapted to all windows, thoroughly practical in mechanical detail, and are truly possessed of every attribute and novel power claimed for them.*

The Lock are finished in Tucker, Nickel and Bronze; *retail at 25, 37½ and 50 cents per window;* come neatly packed (hardware complete for one window, with screws, in single box), and *advertising matter*, together with a *perfect working model* (same as Fig. 1), *is supplied gratuitously to the dealer*. Sample Locks, nickel finish, in section (same as Fig. 2), showing application and operation, shipped to any address on receipt of 50 cents. Circulars, Price List and Discounts forwarded on application. Respectfully, &c.,

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PROPOSALS.

COURT-HOUSE AND JAIL.

[At Pittsburgh, Pa.]

CONTROLLER'S OFFICE, ALLEGHENY CO., PITTSBURGH, PA., June 26, 1884.

Sealed proposals for the erection of a court-house and jail at Pittsburg, Allegheny County, Pa., will be received at this office by the controller, **until 3 o'clock, P. M., of August 16, 1884.**

All proposals must be made in accordance with the plan and specification prepared by H. H. Richardson, architect, which will be open for examination at the office of the County Commissioners, on and after the first Monday of July.

All proposals must be made on blanks furnished by the architect on application at the aforesaid commissioners' office.

The contract will be awarded to the lowest and best bidder upon giving to the county a good and sufficient bond in the sum of five hundred thousand dollars ($500,000), with approved securities for the faithful performance of the work.

All bids must be accompanied with an approved bidder's bond in the sum of one hundred thousand dollars ($100,000).

The commissioners reserve the right to reject any and all bids. JOSEPH SPEER,

449 Controller of Allegheny County.

BRASS TUBES.

[At Washington, D. C.]

U. S. NAVY PAY OFFICE, WASHINGTON, July 8, 1884.

Sealed proposals, in duplicate, to be indorsed "Proposals for Brass Tubes," will be received at this office **until 12 M., the 9th day of August, 1884,** for the below-described brass tubes, to be delivered at the Navy-Yard, Washington, D. C., free of any expense to the Government, and subject to the usual inspection and conditions, viz.: —

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475 brass tubes, 2½″ outside diameter; each 10′ long; thickness, No. 11 Stubbs' wire gauge; estimated weight, 14,060 pounds. To be equal to the seamless brass tubes manufactured by the American Tube Works, 97 State St., Boston, Mass.

No person shall be received as a contractor who is not a manufacturer of, or regular dealer in, the articles which he offers to supply; and the right is reserved to reject any or all bids.

Responsible security required on the bids for faithful performance.

Blank forms for bids to be had at this office, and all necessary information at the Navy Yard.

THOMAS H. LOOKER, Pay Director, U. S. N., Navy Pay Agent.

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PROPOSALS.

SEWER.

[At Norristown, Pa.]

NORRISTOWN, July 10, 1884.

Sealed proposals will be received by the Street and Road Committee of the borough of Norristown, Pa., addressed to Henry Fox, Chairman, **until the 11th day of August, A. D., 1884,** for the furnishing of all the material and the complete construction of a three-foot (inside diameter) sewer, in Main or Egypt St., from Strawberry Alley to a point about Cherry St., in accordance with plans and specifications to be seen at the Borough Engineer's office, No. 505 Swede St.

The committee reserve the right to reject any and all bids. 449

STONE AND BRICKWORK.

[At Dallas, Tex.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., July 12, 1884.

Sealed proposals will be received at this office **until 2 P.M., on the 13th day of September, 1884,** for furnishing all the labor and materials, stone, bricks, mortar, etc., and building complete the basement and superstructure of the court-house, post-office, etc., building at Dallas, Tex., in accordance with drawings and specification, copies of which will be ready by the 15th day of August, and may be seen, and any additional information had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered. H. G. JACOBS,

448 Acting Supervising Architect.

RESERVOIR.

[At Wellesley, Mass.]

Proposals will be received by the Water Commissioners of the town of Wellesley, **until noon of July 26,** for constructing a reservoir of about 1,000,000 gallons capacity; also for a filter well, and about 1,000′ of pipe laying.

The right is reserved to reject any or all bids.

Plans and specifications can be seen at office of F. L. Fuller, Engineer, 7 Exchange Place, Boston.

ALBION R. CLAPP, WILLIAM S. WARE, WALTER HUNNEWELL, } Water Commissioners.

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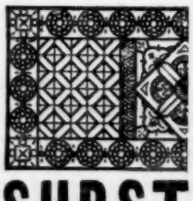

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PROPOSALS.

CHURCH.

[At Parnassus, Pa.]

Sealed proposals will be received **until August 1, 1884,** for the building of a frame church in the Borough of Parnassus, Westmoreland County, Pa.

Plans and specifications can be seen and all information obtained from the undersigned, or from L. S. Strasser, Parnassus, A. V. R. R.

The committee reserves the right to accept or reject any or all bids. D. T. EVANS, Architect,

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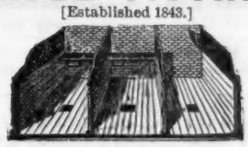

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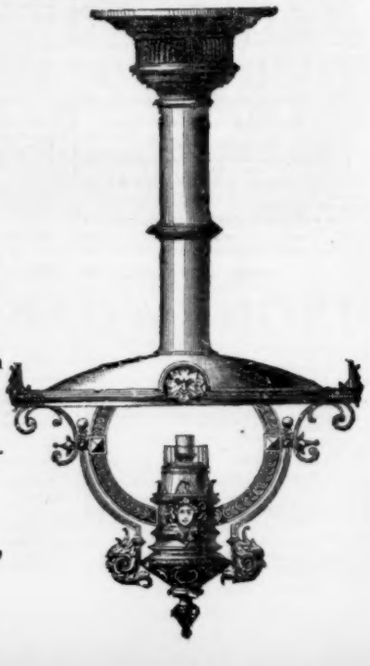

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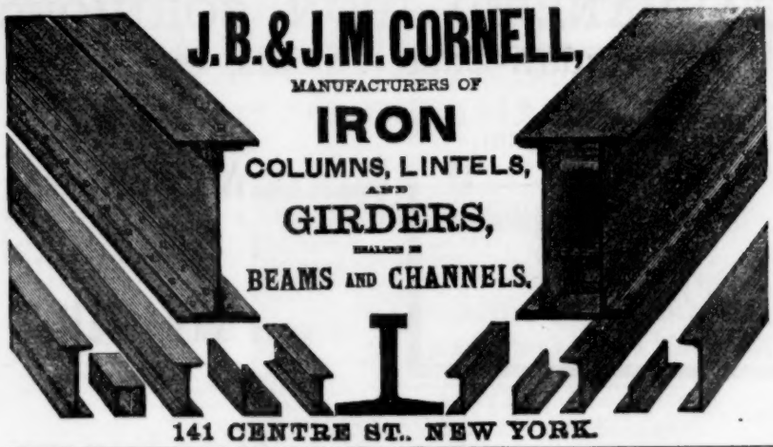

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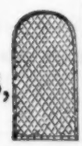

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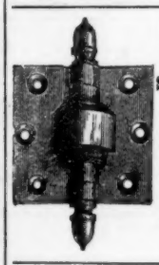

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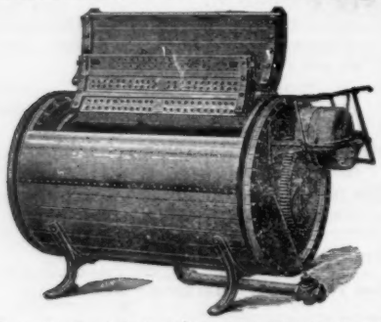

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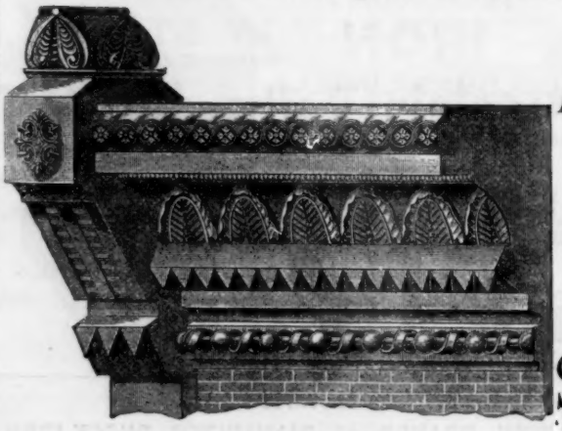

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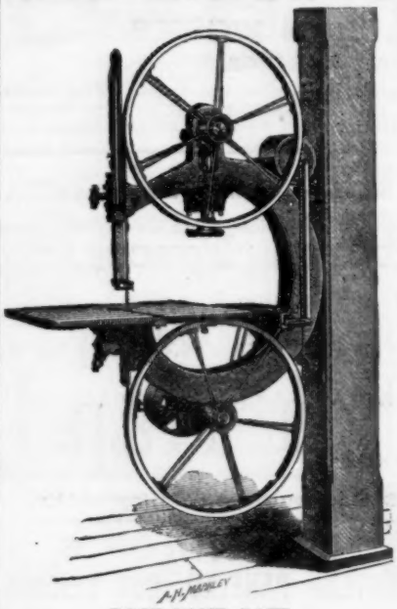

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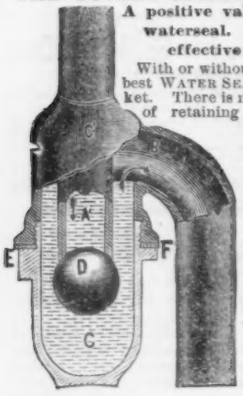

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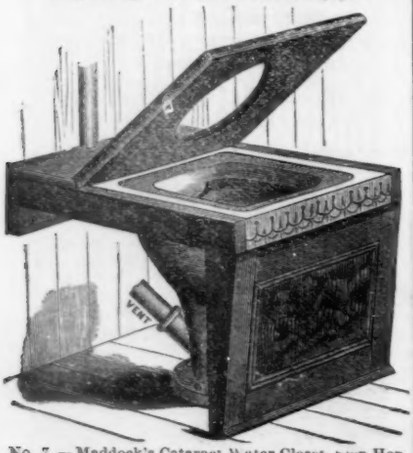

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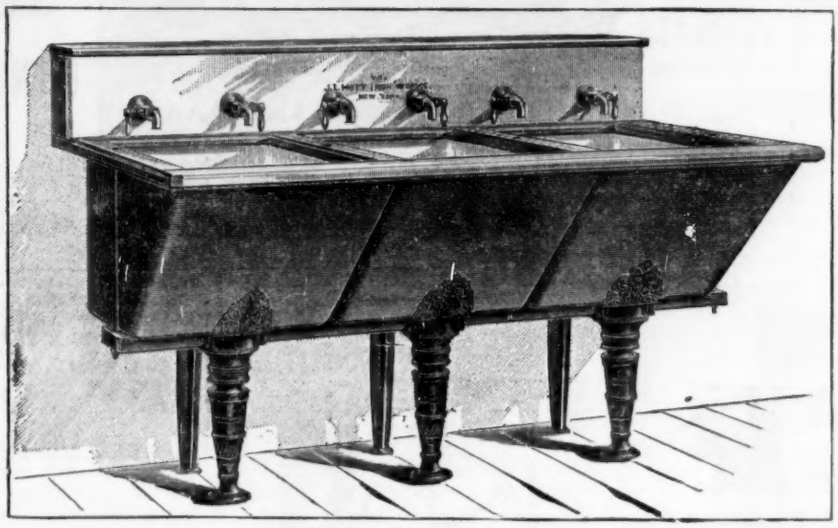

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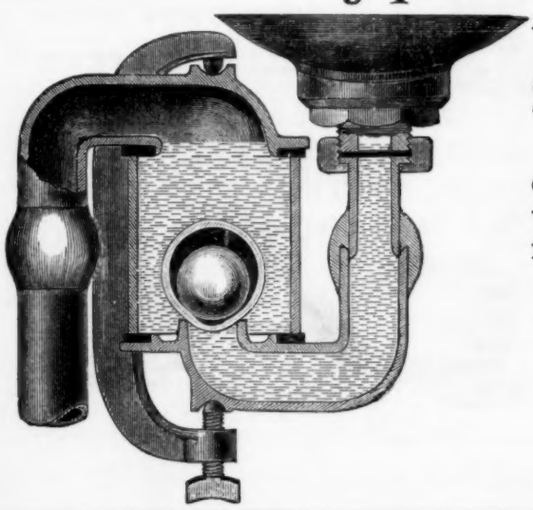

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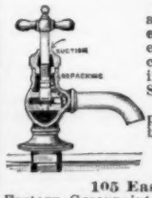

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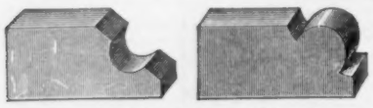

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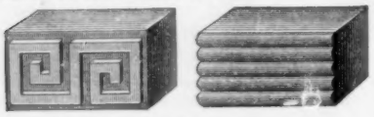

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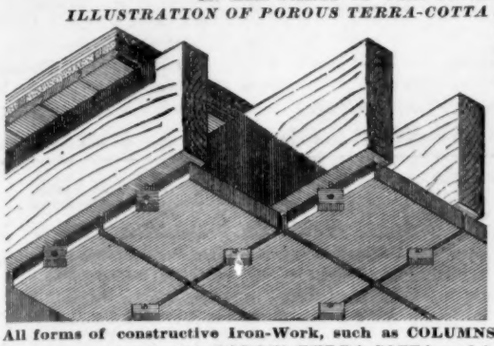

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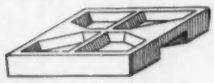

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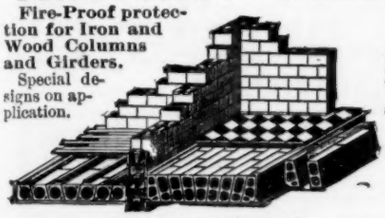

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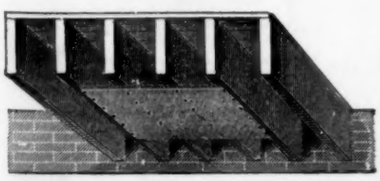

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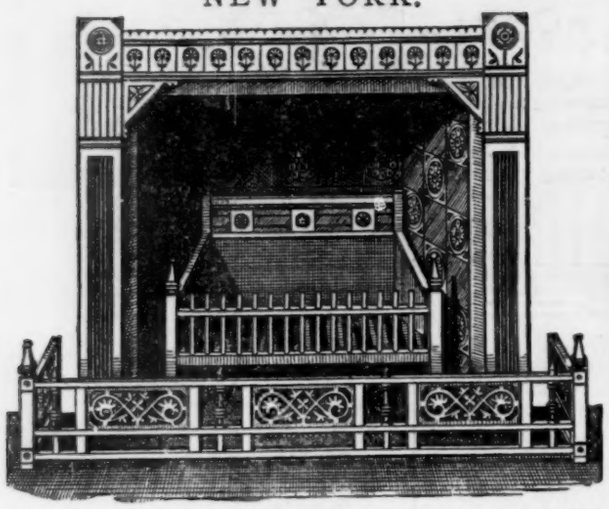

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